Dimensions and Dynamics of National Culture

Beugelsdijk, Sjoerd; Welzel, Chris

Published in:
Journal of Cross-Cultural Psychology

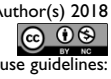
DOI:
10.1177/0022022118798505

Publication date:
2018

Article

Dimensions and Dynamics of National Culture: Synthesizing Hofstede With Inglehart

Journal of Cross-Cultural Psychology
2018, Vol. 49(10) 1469–1505



DOI: 10.1177/0022022118798505
journals.sagepub.com/home/jcc


Sjoerd Beugelsdijk[1] and Chris Welzel[2]

Abstract

Cross-national research on cultural differences across space and time intersects multiple disciplines but the prominence of concepts varies by academic fields. Hofstede's *dimensional* concept of culture, to begin with, dominates in cross-cultural psychology and international management. Inglehart's *dynamic* concept of culture, by contrast, prevails in sociology and political science. We argue that this disciplinary division is unfortunate because the two concepts are complementary, for which reason a synthesis rectifies their mutual weaknesses. Indeed, while Hofstede's *dimensional* concept neglects cultural dynamics, Inglehart's *dynamic* concept is dimensionally reductionist. We demonstrate empirically that combining these two concepts leads to an improved understanding of cultural differences. Inspired by Hofstede's cultural dimensions, we use data from the European Value Studies and World Values Surveys for 495,011 individuals born between 1900 and 1999 in 110 countries and then show that change on these dimensions proceeds as Inglehart and his collaborators suggest. Most notably, younger generations have become more individualistic and more joyous. But even though economic development and generational replacement drive this cultural change, roughly half of the variation in national cultural orientations is unique to each country, due to lasting intercept differences in developmental trajectories that trace back to remote historic drivers. We discuss the implications for cross-national cultural research.

Keywords

Hofstede, Inglehart, modernization theory, culture, globalization, European Values Studies, World Values Survey, generation

Introduction

Every day, another 45 publications worldwide cite the cross-cultural work of Geert Hofstede (1980, 2001) and Ronald Inglehart (1971, 1990, 1997). Together, Hofstede and Inglehart have received over 200,000 citations, making them two of the world's most frequently quoted social scientists (Google Scholar). While Hofstede is known for identifying several *dimensions* of

[1]University of Groningen, The Netherlands
[2]Leuphana University of Lüneburg, Germany

Corresponding Author:
Sjoerd Beugelsdijk, Faculty of Economics and Business, University of Groningen, Nettelbosje 2, Groningen 9700 AV, The Netherlands.
Email: s.beugelsdijk@rug.nl

cross-cultural variation, Inglehart's key contribution consists in a *dynamic* theory of cultural change. Although their work on national cultures is fundamentally related, they only met once[1] and there has never been an attempt to combine their frameworks. Our article intends to close this gap and to synthesize the work of these two authors. Specifically, we apply Inglehart's intergenerational change thesis to a set of cultural dimensions inspired by Hofstede's work.

Hofstede was the first to quantify cultural orientations held by people in more than 60 countries. While referring to national culture as "software of the mind," Hofstede quantified four national culture dimensions based on a survey among IBM employees. He later added two more dimensions using the World Values Surveys (WVS; Hofstede, Hofstede, & Minkov, 2010). Hofstede's current framework consists of six dimensions for which the country scores can be downloaded from his website (www.geerthofstede.com). This framework is used in a variety of fields including cross-cultural management, international business, and cross-cultural psychology (for overviews, see Beugelsdijk, Kostova, Kunst, Spadafora, & van Essen, 2018; Beugelsdijk, Kostova, & Roth, 2017; Kirkman, Lowe, & Gibson, 2006; Taras, Steel, & Kirkman, 2012), and has recently sparked the interest of economists too (e.g., Gorodnichenko & Roland, 2011; Klasing, 2013).

Inglehart (1971, 1990, 1997) was the first to document a massive generational shift in cultural orientations among the public of affluent Western democracies, from a priority on existential security (i.e., "materialist" values) toward a priority on expressive freedom (i.e., "postmaterialist" values). Inspired by Maslow's (1954) "hierarchy of human needs," the findings of Inglehart and his co-authors (Inglehart & Norris, 2003; Inglehart & Welzel, 2005) demonstrate a universal principle in the functioning of the human mind: the "utility ladder of freedoms," as Welzel (2013) has coined it. Accordingly, when both security and freedom are in short supply, people prioritize security because security is a necessity to survive. But as soon as people feel safe, they begin to prioritize freedom because freedom is essential to thrive, in allowing ingenuity, creativity, and recreational pleasure. Hence, socioeconomic transformations that turn the nature of life from a source of threats into a source of opportunities nurture a generational shift in priorities from "survival" to "emancipative" values.

Inglehart and Welzel (2005) have summarized these findings in a "revised theory of modernization." Welzel (2013) has developed this theory further into an "evolutionary theory of emancipation," pointing out some key qualifications of emancipatory value change. For such a change to happen, it needs no agent, no campaign, no program, and no particular political system—such as democracy—because emancipatory value change is a self-driven automatism by which the human mind adjusts its programming to changing existential conditions. This automatism is not culture-specific but a species-wide universalism of humanity. Hence, evolution has infused human existence with a "utility-value link" through which we adjust our subjective values to life's objective utilities. This link is vital for human livability in keeping our goals in touch with reality. The utility-value link is also a precondition for our development because it makes moral progress possible. Moreover, human existence is upwardly directed on the utility ladder of freedoms: we are evolutionary hard-wired to stay on the lower rungs where we prioritize security only as long as necessity dictates such stagnation, but we climb toward the higher rungs where we seek freedom as soon as opportunity allows for this ascension. Adaptive value shifts of this kind happen to some extent within generations but they usually proceed much more profoundly between generations because people tend to stick more strongly to their once adopted values as they age. This theoretical framework has been confirmed by recent findings in psychology using completely different data. Grossmann and Varnum (2015), for instance, infer an increase of individualism from changing word frequencies documented in the Google-Ngram-Database for the United States. Zhou et al.'s series of interviews of Chinese grandmothers strongly suggest an intergenerational shift from Collectivism toward individualism in China (Zhou, Yiu, Wu, & Greenfield, 2018). Using a variety of indicators, Hamamura (2012) not only reports a shift toward

individualism in the United States and Japan but also highlights the persistent cultural heritage in these two countries, a finding in line with Inglehart's revised modernization thesis.

Although highly influential, Hofstede's and Inglehart's works have been heavily criticized. While Hofstede has been questioned for presuming a too stable notion of national culture, his framework has also been questioned for overestimating the number of dimensions, misinterpreting their meaning, and using data of questionable quality (Ailon, 2008; Baskerville, 2003; Baskerville-Morley, 2005; Fang, 2003; McSweeney, 2002, 2009; Taras et al., 2012; Venaik & Brewer, 2016). Inglehart, on the contrary, has been criticized for a flawed dimensional understanding of culture that reduces cross-national variation to two misspecified dimensions and for overestimating the generational replacement dynamic in cultural change (Aléman & Woods, 2016; Flanagan, 1987; Flanagan & Lee, 2003).

The weaknesses in the conceptions of Hofstede and Inglehart are complementary, raising an unanswered question: Does the evolutionary logic of cultural change suggested by Inglehart and Welzel apply to a better validated set of cultural dimensions inspired by Hofstede? This issue is particularly relevant for Hofstede's framework, because his country scores are based on data originally collected more than 40 years ago (1968-1973). By synthesizing a newly developed multidimensional national culture framework inspired by Hofstede with Inglehart's dynamic theory of cultural change, this article attempts to resolve this issue. In the process of synthesizing Hofstede with Inglehart, our exploratory analysis reconfirms the concerns regarding the number and meaning of the original Hofstede dimensions of cross-cultural variation, leading to a newly validated set of three cultural dimensions for which we then examine the evidence for cultural change.

To develop our multidimensional framework and to put it into the dynamic perspective of cultural change, we pool nation-level culture measures across all waves of the WVS and European Values Studies (EVS). The resulting nation-level longitudinal database summarizes the responses of 495,011 individuals surveyed between 1981 and 2014 in 110 countries based on stratified random sampling procedures. Unlike Hofstede who used a matched sampling procedure based on IBM employees, the WVS-EVS collect nationally representative samples of a country's entire residential population at the age of 18 and older. The standard procedure to select respondents is a form of random probability sampling, although the details vary due to each country's territorial and demographic specifics.

We apply a variety of psychometric techniques commonly used in cross-cultural psychology and comparative sociology. Using the cultural dimensions thus found, we follow Inglehart's cohort approach (Inglehart, 1990, 1997; Inglehart & Welzel, 2005) and assess intergenerational cultural change by comparing five birth cohorts between 1900 and 2000. This allows us to explore cultural change in an absolute sense, and to shed light on the question to what extent cultural change is present in a cross-cultural framework inspired by Hofstede and whether it is present in the ways suggested by the evolutionary logic in the work of Inglehart and Welzel.

Our analysis leads to three conceptually and empirically independent dimensions, collapsing Hofstede's original model from six dimensions to three. The three dimensions we find comprise Collectivism–Individualism, Duty–Joy, and Distrust–Trust.

The evolutionary logic in the works of Inglehart and Welzel predicts a generational shift from orientations dominant under pressing existential threats (i.e., survival orientations) toward orientations dominant under abundant existential opportunities (i.e., emancipative orientations)—to the extent to which socioeconomic development indeed changed objective living conditions that way. To identify such generational cultural shifts on the three dimensions, we need to determine first which polar end in each of these dimensions is closer to existential pressures and survival and which to existential opportunities and emancipation. The answer to this question is obvious to us, as it seems self-evident that Collectivism and Duty are more adaptive to existential pres-

sures, while the opposite values—Individualism and Joy—are adaptive to existential opportunities (Varnum & Grossmann, 2017).

According to the "evolutionary theory of emancipation," national populations' subjective life orientations vary on a continuum from a "preventive closure" mentality, in which people emphasize uniformity, discipline, hierarchy, and authority, toward a "promotive openness" mentality, in which they emphasize the opposite traits, namely, diversity, creativity, liberty, and autonomy. The correspondence between objective living conditions and subjective life orientations consists in the fact that preventive closure is adaptive under pressing threats, while promotive openness is adaptive in the presence of promising opportunities. Emphasizing Collectivism and Duty belong to the preventive closure mentality and are, thus, more likely to prevail under the conditions favoring preventive closure, which is existential threats. As concerns Distrust–Trust, the prediction is ambivalent because a shift from existential pressures to opportunities is supposed to increase horizontal trust in other people but to decrease vertical trust in hierarchical institutions. Hence, we expect no clear direction on the Distrust–Trust dimension covering both horizontal and vertical trust.

Applying Inglehart's dynamic concept to our three dimensions, we find that orientations are shifting over the generations (a) from Collectivism toward Individualism and (b) from Duty toward Joy—to the extent that socioeconomic development improves objective living conditions that way. By contrast, there is (c) no clear shift from Distrust toward Trust or vice versa, no matter how socioeconomic development proceeds. But even though socioeconomic development is a significant force in driving generational shifts toward Individualism and Joy, a substantial part of the explanation of these cultural shifts is country-specific, reflecting lasting intercept differences in developmental trajectories that trace back to remote historic drivers. These findings connect and enrich two literatures concerned with similar phenomena yet operating in isolation from each other. Integrating insights from sociology and political science on intergenerational cultural shift in the context of an updated Hofstede framework allows for a more complete understanding of national cultural differences and how they have changed during the last decades.

The remainder of this article is structured as follows. First, we discuss Hofstede's multidimensional framework and Inglehart's theory of cultural change. We summarize the criticism raised in the context of their theories. We then re-explore the dimensional structure of item sets used by Hofstede's based on the WVS-EVS. As the results on cultural change are only reliable when the found dimensions are reliable, the first part of this article is dedicated to establish reliable dimensions of national culture. We delegate additional material to an online appendix for length considerations. All information required to replicate the material presented in this article are available at this journal's website. The country scores for the newly established dimensions are included in the online appendix as well.

Hofstede's Dimensions and Inglehart's Dynamics

Hofstede's National Cultural Dimensions and the Critique of His Framework

Hofstede (1980) was the first researcher to reduce cross-national cultural diversity to country scores on a limited number of dimensions. Hofstede's work provided researchers with a consistent quantification of cultural differences between countries, causing a surge in empirical studies about the impact of culture on the activities and performance of multinational firms (Kirkman et al., 2006). He constructed his culture framework from data collected in attitudinal surveys conducted in subsidiaries of IBM in 72 countries between 1968 and 1973 (reduced to 40 countries after the criterion of at least 50 respondents was applied). Alternative frameworks and dimensions of national culture have appeared since, such as the Globe study (House, Hanges, Javidan, Dorfman, & Gupta, 2004) and most notably the Schwartz Personal Values Inventory (Schwartz, 1994, 2004).

Since its inclusion as a standard module in the European Social Survey, the Schwartz Value Inventory has become the most widely recognized concept of values in psychology. But in terms of representative population data, it remains limited to Europe. It is unsuited for the kind of cross-cultural global comparison pursued here.[2] Besides, the cross-national variability in Schwartz's values has been shown to overlap substantially with key dimensions in both Hofstede's and Inglehart's value concepts (Inglehart & Welzel, 2005). In fact, the Autonomy versus Embeddedness and Self-Enhancement versus Self-Transcendence dimensions underlying the Schwartz value space depict the two dimensions of the Inglehart–Welzel world map of cultures in a 45° rotated manner (Welzel, 2013). For all these reasons, we focus our global comparison on a synthesis of Hofstede's dimensional perspective with Inglehart's dynamic viewpoint.

Hofstede (1980) originally provided country scores for four dimensions of national culture: Power Distance (vs. Closeness),[3] Uncertainty Avoidance (vs. Acceptance), Individualism versus Collectivism, and Masculinity versus Femininity. Country scores for the fifth and sixth dimension, Long-Term (vs. Short-Term) Orientation (LTO) and Indulgence versus Restraint (IVR), have been added later. While the country scores for the four original dimensions are derived from surveys conducted at IBM, the scores for the latter two dimensions are calculated from data of the WVS.

Power Distance versus Closeness reflects the extent to which people reject (Distance) or appreciate (Closeness) hierarchies and the authority of a few over the many. *Uncertainty Avoidance versus Acceptance* indicates how strong a need people have to operate under well-organized and highly predictable circumstances (Avoidance) or how much they are able to improvise and to cope with unplanned settings (Acceptance). *Individualism versus Collectivism* denotes the extent to which people see themselves primarily as autonomous personalities (Individualism) or primarily as members of tightly knit communities (Collectivism). *Masculinity versus Femininity* reflects an emphasis on caring for others, solidarity, and cooperation (Femininity), as opposed to achievement, success, and competition (Masculinity).

The LTO dimension was uncovered in a study by the Chinese Culture Connection (1987) project, which sought to remedy the potential Western bias in the original IBM survey by running a separate survey designed by an independent team of Asian researchers (Hofstede & Bond, 1988). The project identified a fifth, until then unknown, dimension (yet also failed to confirm the existence of the Uncertainty Avoidance dimension and highlighted the correlated nature of Individualism and Power Distance). Initially, this fifth dimension was labeled Confucian Dynamism to reflect the Confucian nature of the values it included. However, Hofstede (1991) changed the name of this dimension using the more general label of Long-Term (vs. Short-Term) Orientation. Countries scoring high on Long-Term Orientation tend to be more future-oriented and easily accept delayed gratification of individual effort. Cultures in which this orientation dominates are characterized by strong perseverance and thrift. By contrast, countries with a Short-Term Orientation are characterized by a "here and now" mentality that programs them to grab a benefit whenever one can.

While national scores on LTO were originally available only for a limited number of countries, Hofstede et al. (2010) added scores for more countries using WVS data and imputing techniques (Minkov & Hofstede, 2012). Hofstede et al. (2010) further provided scores on a sixth dimension called *Indulgence versus Restraint*, originally discovered by Minkov (2011). This dimension was also identified on the basis of WVS items and reflects the degree to which people are inclined to express emotions and enjoy momentary pleasures (Indulgence) or to what extent they suppress emotional impulses and have a need for discipline and strict codes of conduct. A succinct overview of the questions underlying these six dimensions can be found in Table A1 in the online appendix. A more detailed discussion on the data collection and psychometric techniques used can be found in Hofstede (1980, 2001), Hofstede et al. (2010), and Venaik and Brewer (2010), as well as Brewer and Venaik (2011).

Since its original publication, there have been several attempts to replicate Hofstede's multidimensional framework. Hofstede reports six replication studies (Hofstede et al., 2010). All these studies focus on replicating one or more of the dimensions as such, but they have not addressed cultural change over time.

It goes beyond the scope of this article to describe the many ways in which scholars have applied Hofstede's culture framework. Kirkman et al. (2006) qualitatively reviewed 180 empirical studies using Hofstede's dimensions published in 40 business and psychology journals and book series between 1980 and 2002. Similarly, Tsui, Nifadkar, and Ou (2007) reviewed 93 cross-cultural articles published in 1996 to 2005 in 16 top management journals. Gelfand, Erez, and Aycan (2007) provide an almost exhaustive overview of cross-cultural organizational behavior and psychology. Taras, Kirkman, and Steel (2010) perform a large meta-analysis of all of Hofstede's dimensions in 598 studies. Among others, they find that Individualism is the most often used dimension, and also has the greatest predictive power compared with the other dimensions. This particular finding is not surprising because the Individualism versus Collectivism dimension can be found in all cultural frameworks (i.e., Hofstede, Schwartz, Globe, Welzel). It is widely considered as the quintessential marker of a society's prevalent mentality and culture, and has evolved into a multidimensional and multi-level construct (see Earley & Gibson, 1998; Oyserman, Coon, & Kemmelmeier, 2002; Singelis, Triandis, Bhawuk, & Gelfand, 1995; Triandis, Bontempo, Villareal, Asai, & Lucca, 1988; Triandis & Gelfand, 1998).

What all these studies have in common is that they highlight the significant impact Hofstede's framework has had on various fields, specifically cross-cultural management, international business, comparative management, and cross-cultural psychology (Beugelsdijk et al., 2018; Beugelsdijk et al., 2017; Søndergaard, 1994). Notwithstanding its significance and continuing popularity, Hofstede's framework is certainly not without criticism (McSweeney, 2002, 2009; Minkov, 2018; Nakata, 2009).

Hofstede's data collection procedure and sample has been questioned on grounds of representativeness (Baskerville, 2003; McSweeney, 2002, 2009). Javidan, House, Dorfman, Hanges, and de Luque (2006) point to the possibly U.S.-centric and specifically IBM-centric nature of Hofstede's data. A second point of critique concerns the labeling of the dimensions and the associated face validity of their content (Minkov, 2018). Especially, the Individualism versus Collectivism dimension has been criticized on grounds of not capturing the content of the underlying items properly (Brewer & Venaik, 2011; Oyserman et al., 2002; Smith, Dugan, & Trompenaars, 1996).[4] In the words of Brewer and Venaik (2011), "there is little collectivist (as defined by Hofstede) about training opportunities, desirable working conditions, or using skills at work" (p. 439). Hofstede himself initially labeled this dimension Individualism-Company orientation, but chose to use the Collectivism pole instead. Other scholars have suggested to re-label this dimension individual freedom vs individual development and intrinsic (work related) vs extrinsic (non-work related) (Gelfand, Bhawuk, Nishii, & Bechtold, 2004) or self-orientation–work orientation (Brewer & Venaik, 2011). A third critical comment concerns the empirical observation that Individualism versus Collectivism and Power Distance versus Closeness are one factor, with Individualism and Power Distance merging in a single pole (Smith et al., 1996). Hofstede distinguishes between Individualism and Power Distance because "they are conceptually distinct" (Hofstede, 1980, p. 62).[5] Empirically, however, they are part of one dimension and represent the two ends of one dimension. LTO and IVR also form one factor in an ecological factor analysis. This becomes evident from the results of a factor analysis on Hofstede's six dimensions as shown in Table 1. From an *empirical* point of view, Hofstede's six-dimensional framework (4 IBM-based + 2 WVS-based) consists of four dimensions (3 IBM-based + 1 WVS-based).[6] As explained in detail in "Hofstede's Dimensions: A WVS-EVS Based Re-Examination" section below, our WVS-EVS based analysis mimics this correlational structure.

Table 1. Country-Level Factor Analysis of Hofstede's Six Dimensions.

	(Rotated) factor loadings Three-factor solution		
Hofstede dimensions	Factor 1	Factor 2	Factor 3
Power distance	.85	.15	.20
Individualism	−.87	.03	.08
Masculinity	.04	−.02	.98
Uncertainty avoidance	.47	−.07	−.07
Long-Term orientation	−.12	.88	.07
Indulgence vs. Restraint	−.26	−.84	.11

Note: $N = 62$ countries.

The temporal stability of the scores on Hofstede's cultural dimensions is increasingly questioned (Minkov & Hofstede, 2014; Shenkar, 2001; Tung, 2008; Tung & Verbeke, 2010). Hofstede provided preliminary evidence to claim that his 1968 culture data are enduring and persistent (Hofstede, 1980, chapter 8), concluding that "national cultures are extremely stable over time" (Hofstede, 2001, pp. 34-36). Whether the use of Hofstede's data is "legitimate" from a temporal perspective depends on the nature of cultural change (Beugelsdijk, Maseland, & van Hoorn, 2015; Ralston, 2008). There are three possible outcomes regarding cultural change: (a) there is no cultural change, in which case country scores and rankings remain the same; (b) there is cultural change but it does not follow a uniform trend, instead showing recessive shifts in some countries but progressive ones in others; and (c) there is cultural change and it does follow a uniform trend in that most countries move in the same direction, whether recessive or progressive.

Yet, even if the prevailing pattern were a uniform progressive trend in values, there are still three distinct possibilities as concerns cultural convergence/divergence, depending on the speed by which countries move: (a) countries move in the same direction at the same speed, in which case their absolute distances remain constant[7]; (b) the top scoring countries move faster in the same direction than the low-scoring ones, in which case the absolute distances grow (i.e., the case of cultural divergence); and (c) the low-scoring countries catch up and move faster in the same direction than the top scoring ones, in which case the absolute distances shrink (i.e., the case of cultural convergence).

Inglehart's Theory of Cultural Change

The writings in sociology and political science on cultural change are dominated by modernization theory, predicting that continued economic development goes together with predictable changes in norms, values, and beliefs (Bell, 1973; Flanagan, 1987; Inglehart, 1971, 1990, 1997; Inkeles, 1960; Inkeles & Smith, 1974; McClelland, 1961; Nash, 1964; Welzel, 2013). The shift from industrial to postindustrial society brings about fundamental changes in people's daily experiences, which are reflected in changing worldviews (Inglehart & Baker, 2000). While industrial structures require rational, hierarchical forms of organization and deferential attitudes toward authority, in a service-dominated, postindustrial economy, information processing and communication become more important. As a result, values such as self-expression and autonomy begin to replace self-restraint and obedience (Inglehart, 1990, 1997; Inglehart & Welzel, 2005; Welzel, 2013). Moreover, as people in postindustrial societies are used to handle complex situations, to deal with abstract constructs and to cope with social diversity, their moral reasoning capacity and empathy expand (Flynn, 2012; Pinker, 2011). As a consequence, the emphasis

on individual self-determination goes together with an emphasis on equal opportunities, giving rise to emancipative values that support universal freedoms (Welzel, 2013).

Theorists of globalization advocate a universalistic view due to which modernity's isomorphic tendencies drive an increasing convergence of human values (Bell, 1973; Inkeles & Smith, 1974). Proponents of "multiple modernities," by contrast, insist that cultural differences along civilizational faultlines will prevail, if not increase in what Huntington (1996) described as a "clash of civilizations."

Inglehart and Baker (2000) show that, despite cultural change in a common direction, countries have a unique historical past that continues to shape their national cultures (see also Inglehart & Welzel, 2005). Hofstede agrees with this modified notion of modernization theory implying the existence of multiple paths to modernity (cf. Eisenstadt's notion of "multiple modernities," Preyer & Sussman, 2016). In Hofstede's view, technological modernization is an important driver of cultural change, which leads to somewhat similar developments in different societies, but it does not wipe out variety. It may even increase differences; on the basis of preexisting value systems, societies cope with technological modernization in different ways (Hofstede, 2001).

This "revised theory of modernization" predicts that national cultures change, but that relative country rankings do not. In other words, countries experiencing similar socioeconomic transformations change their values in the same direction, but they do so coming from different starting positions and continue to move along separate trajectories, which reflect the lasting impact of remote, country-specific historic drivers. Hence, even though countries change their position in absolute terms, relative to each other, they seem to remain in a rather stable distance. In fact, Welzel (2013) even shows evidence for divergence, as those countries having been ahead in matters of emancipation already decades ago moved even faster toward more emancipation, Scandinavia and Sweden being the clearest cases in point.

As many times as Inglehart's work has been cited, it has been criticized—and often quite strongly so. While most scholars concerned with this work find the dynamic element of Inglehart's theory plausible, they object his measures for reasons of a misspecified dimensionality. Flanagan (1987) argued early on that Inglehart's narrow concept of postmaterialism presses into single dimension things that are in fact dimensionally distinct: namely, postauthoritarian liberalism and postmaterial idealism (see also Welzel, 2007). Moreover, and more important in our context, the 20 items used to generate the two dimensions on the Inglehart–Welzel world map of cultures only generate two dimensions when one actively enforces the extraction of exactly two dimensions (Welzel, 2013). By contrast, if one lets the data decide if the 20 items cohere in two clearly distinct dimensions, the answer is a resounding "No": There is just one dimension, which is mostly due to the fact that the traditional end in "Traditional versus Secular-rational Values" and the survival end in "Survival versus Self-expression Values" are highly convergent (Li & Bond, 2010).

In light of this criticism, the Inglehart dimensions provide no reliable testing ground for dynamic theories of cultural change. Hence, to test whether cultural change follows the evolutionary logic suggested by Inglehart and Welzel, it is necessary to rely on a newly validated set of dimensions.

Hofstede's Dimensions: A WVS-EVS Based Re-Examination

By applying Inglehart's generational approach to dimensions that are closely related to Hofstede's model, we are able to synthesize Hofstede's and Inglehart's theories. To that end, we follow an empirical–criterion referenced approach (House et al., 2004; Nunnally & Bernstein, 1994) using the WVS-EVS data.[8] The purpose of this exploratory re-examination is to find and establish the best-fitting dimensional structure of national cultures based on items resonating on at least some level of intuition with the themes looming in the debate about Hofstede's "4 + 2" structure. Explicitly expecting—in the light of previous criticism—that the number of dimensions

emerging from the best-fitting factor solution will be lower than Hofstede's "4 + 2" structure and that the emerging dimensions will also deviate in content from Hofstede's interpretation, our aim is to find a set of dimensions of cross-national cultural variation that fits the data better and is more meaningful than Hofstede's "4 + 2" scheme.

Data and Sample

The datasets we use are the WVS and the EVS. Combined, this database covers 110 countries and 495,011 individuals. Approximately, one third of these respondents were sampled in the EVS and two thirds in the WVS. The time period is 1981-2014, including individuals born between 1900 and 1999 covering one century of "formative years" in our analysis of intergenerational value shifts. Over the years, the sample has included more and more non-Western countries (Table A2 in the online appendix shows details of our sample).

As mentioned, country scores on the fifth and sixth Hofstede dimension are already based on WVS-EVS items. In addition to these items, we further screen the WVS-EVS questionnaire for more items resonating with the content of Hofstede's original four dimensions: Individualism versus Collectivism, Power Distance versus Closeness, Uncertainty Avoidance versus Acceptance, and Masculinity versus Femininity. We select items that are limited to preferences and beliefs, thus excluding questions on objective facts, like the number of children in the household.[9] We select those countries from the WVS-EVS for which the same question has been asked to a substantial number of respondents (Uz, 2015). Moreover, we select only those items that have been included in all waves, as our cohort analysis requires a longitudinal dataset. This limits the number of items substantially.

We calculate country averages on the selected items because our analysis is done at the ecological level, which is the appropriate level of analysis when *national* cultures is the object of study (Hofstede, 2001). For binomial items, we take the fraction of respondents in the respective reference category. Items with three or more nominal categories are recoded such that the fraction of each category is calculated. The country scores on items with a Likert-type scale (often 1-10) are calculated as averages. The final selection criterion is that the correlation between a specific WVS-EVS item's country score and country scores of any of the four original dimensions is |.5| or higher.

Of the 237 attitudinal items, 26 correlate at |.5| or higher with country scores on any of the Hofstede dimensions. Of these 26 items, six were included by Hofstede to calculate country scores on his two additional dimensions, and 20 correlate with any of the four original Hofstede dimensions. Of these 20, nine need to be dropped because of very limited coverage across waves (typically only one or two waves are covered in those nine cases). One additional item is dropped because of limited variation across countries. In addition to the 10 remaining items, we use the six items already used by Hofstede et al. (2010) to calculate country scores on the two additional dimensions of IVR and LTO. We drop the item "how important is service to others" in the LTO dimension, because this question is only available for 39 countries. Table A3 in the online appendix provides all measurement details of the selected items.[10] The correlational wave-averaged analysis yields a set of 15 items that fulfill all of the above criteria, that is, considerable country coverage, multiple wave coverage, attitude-based, and significantly correlated with country scores on the four original Hofstede dimensions or included to calculate country scores in the fifth and sixth dimension. Tables 2 and 3 summarize the final set of items and the pairwise correlations between each of the 15 items and country scores on the original Hofstede dimensions.

Correlations and Factor Structure

The WVS-EVS items that correlate positively with country scores on Individualism versus Collectivism correlate negatively with Power Distance versus Closeness and vice versa. This is

Table 2. List of Fifteen WVS-EVS Questions.

Abbreviated WVS-EVS Question	Question	Scale
1. Live to make parents proud	One of the main goals in my life is to make my parents proud	1 = *agree strongly* to 4 = *disagree strongly*
2. Private ownership	Private versus state ownership of business	1 = *state ownership should be increased* 10 = *private ownership should be increased*
3. Homosexuality justified	Please tell me if homosexuality can be justified	1 = *never justifiable* 10 = *always justifiable*
4. Abortion justified	Please tell me if abortion can be justified	1 = *never justifiable* 10 = always justifiable
5. Jobs scarce own national	When jobs are scarce: Employers should give priority to (own nation) people than immigrants	% of people who disagree
6. Confidence politics	How much confidence you have in politics	1 = *a great deal* 4 = *none at all*
7. Confidence justice	How much confidence you have in justice system	1 = *a great deal* 4 = *none at all*
8. People can be trusted	In general do you think most people can be trusted or that you need to be careful in dealing with people?	% of people who say that most people can be trusted
9. Bigger interests	Generally speaking, would you say that this country is run by a few big interests looking out for themselves, or that it is run for the benefit of all the people?	% of people who say that country is run by big interest
10. Materialism-Postmaterialism	Inglehart's postmaterialist index	1. materialism 2. mixed 3. postmaterialism
Five WVS-EVS questions included by Hofstede, Hofstede, and Minkov (2010) in fifth dimension long-term orientation and sixth dimension Indulgence versus restraint:		
11. Thrift as child quality	Important child quality: thrift saving money and things	% of people who say that thrift is important
12. Pride in nation	How proud are you to be [nationality]	1 = *not at all proud* 4 = *very proud*
13. Leisure time is important	Importance of leisure time in life	1 = *not at all important* 4 = very important
14. Happiness	Taking all things together, would you say you are	1 = *not at all happy* 4 = *very happy*
15. Freedom choice and control	Please indicate how much freedom of choice and control you feel you have over the way your life turns out	1 = *none at all* 10 = *a great deal*

Note: For reason explained in the main text, Items 9 and 12 are dropped in the final calculation of the replicated dimensions. Inglehart's materialism-postmaterialism index is the construct based on four items (see Inglehart, 1971) related to the importance of maintaining order in the nation, fighting rising prices, giving people more say in important political decisions, and protecting freedom of speech. Items 11 to 15 have been included by Hofstede in the construction of the fifth and sixth dimension. As explained in the main text, we chose not to include a sixth question on importance of service to others that Hofstede et al. (2010) included. We do so for lack of coverage across waves. WVS = World Values Surveys; EVS = European Values Studies.

Table 3. Pairwise Correlations Between 15 WVS-EVS Items and Hofstede's Dimensions ($p < .05$).

	Original Hofstede dimensions					
Abbreviated WVS-EVS question	Individualism	Power distance	Uncertainty avoidance	Masculinity	Long-term orientation	Indulgence versus restraint
1. Live to make parents proud	.65 (62)	−.60 (55)			.56 (79)	
2. Private ownership	.66 (64)	−.63 (64)				.23 (91)
3. Homosexuality justified	.57 (65)	−.52 (65)				.43 (91)
4. Abortion justified	.63 (65)	−.47 (65)		−.25 (65)	.43 (90)	
5. Jobs scarce own national (R)	.63 (63)	−.58 (63)		−.34 (63)		.35 (89)
6. Confidence politics (high to low)			.56 (64)			
7. Confidence justice (high to low)			.61 (62)			
8. People can be trusted	.51 (65)	−.54 (65)	−.53 (65)		.26 (90)	
9. Country run by bigger interests			.62 (43)			
10. Materialism-Postmaterialism	.54 (63)	−.61 (63)				.62 (89)
Five WVS-EVS questions included by Hofstede, Hofstede, and Minkov (2010) in fifth dimension long-term orientation and sixth dimension indulgence versus restraint:						
11. Thrift as child quality (R)	−.33 (65)	.38 (65)			.58 (90)	−.35 (91)
12. Pride in nation (R)	−.28 (65)				−.80 (90)	.31 (91)
13. Leisure time is important	.27 (64)	−.33 (64)				.72 (91)
14. Happiness (R)			−.33 (65)		−.35 (90)	.78 (91)
15. Freedom choice and control					−.33 (89)	.79 (91)

Note: Correlations are at the country level. Number of countries is mentioned between parentheses. WVS = World Values Surveys; EVS = European Values Studies.

not surprising given the fact that Individualism and Power Distance were one factor in Hofstede's data. Second, the items that correlate with Uncertainty Avoidance versus Acceptance do not correlate significantly with the other dimensions. Third, the items that correlate positively with LTO correlate negatively with IVR and vice versa. Finally, we find only two items that correlate (weakly) with Masculinity versus Femininity. Factor analyzing (oblique rotation) these 15 items yields three factors ($n = 63$ countries). The eigenvalues for these three factors are 4.9 (Factor 1), 3.2 (Factor 2), and 2.5 (Factor 3), and the fourth factor has an eigenvalue that drops below 1 (eigenvalue is .89), which is the usual cutoff to decide on the number of factors. In addition, we find that the Bayesian information criterion (BIC) model fit is best in a three-factor model.[11] Table 4 shows the rotated loadings.

The explained variance of the three factors is high, that is, 27% for Factor 1, 26% for Factor 2, and 19% for Factor 3. Together these three factors explain 72% of the variation in this set of 15 items. The three-factor solution suggests that the selected WVS-EVS items can be used to

Table 4. Country-Level Factor Analysis 15 WVS-EVS Questions.

	(Rotated) factor loadings Three-factor solution		
Abbreviated WVS-EVS Question	Factor 1	Factor 2	Factor 3
1. Live to make parents proud (high to low)	.95	.02	.00
2. Private ownership	.38	.35	.12
3. Homosexuality justified	.67	.59	.02
4. Abortion justified	.93	.06	−.11
5. Jobs scarce own national	.64	.43	.13
6. Confidence politics (high to low)	−.02	.13	−.92
7. Confidence justice (high to low)	.06	−.10	−.84
8. People can be trusted	.67	.16	.49
9. Country run by bigger interests	.05	−.22	−.82
10. Materialism-Postmaterialism	.34	.85	.03
Five WVS-EVS questions included by Hofstede, Hofstede, and Minkov (2010) in fifth dimension long-term orientation and sixth dimension indulgence versus restraint:			
11. Thrift as child quality	.18	−.66	.25
12. Pride in nation (R)	−.66	.50	.21
13. Leisure time is important	.41	.65	−.28
14. Happiness	−.16	.78	.41
15. Freedom choice and control	.04	.82	.06
Explained variance	27%	26%	19%

Note: Correlations are at the country level, $N = 63$; see Table 2 for full explanation of items. For reasons explained in the main text, we drop Items 9 and 12 from the analysis. WVS = World Values Surveys; EVS = European Values Studies.

capture Individualism and Power Distance (what we call *Dimension 1*), Long-Term Orientation/IVR (what we call *Dimension 2*), and Uncertainty Avoidance (what we call *Dimension 3*).

To verify uni-dimensionality, we also perform a factor analysis on the items that form each dimension. In addition, we calculate reliability scores, and test if the reliability of the dimension can be further increased by leaving out specific items. This leads us to drop the item "pride-in-nation" from our analysis. A factor analysis including the pride-in-nation question in the first or third dimension indicates a separate and unique loading of the pride-in-nation question. We thus decide to exclude the pride-in-nation question in the remainder of the analysis. As both the question on national pride as well as the question on service to others are part of the WVS-based long-term orientation dimension (see Table A1 in the online appendix), our decision to exclude those two questions implies to retain only one item included in Hofstede et al.'s (2010) long-term orientation dimension.

We include the item on (lack of) "trust" in the factor that reflects Uncertainty Avoidance (Dimension 3), because Hofstede has related lack of trust to Uncertainty Avoidance (Hofstede, 2001, p. 169; Minkov & Hofstede, 2014, p. 165), and this trust question is related to institutional well-functioning (Beugelsdijk & Maseland, 2011). We have tested whether including this generalized trust question in the first dimension affects our analysis in "Inglehart's Dynamics: Intergenerational Culture Shift" section, and it does not (see Online Appendix Table A4). For conceptual reasons, we thus decide to keep the generalized trust question in the third dimension. In the same spirit, we have tested whether exclusion of the question on state versus private ownership from the first dimension affects our findings. It does not (see Table A4 in the online appendix).

The first dimension, which we label Collectivism–Individualism, is based on five items and available for 90 countries. It has a Cronbach's alpha of .87. The second dimension, labeled Duty-Joy, is available for 106 countries and is based on five items. Its alpha equals .77. The third dimension, labeled Distrust-Trust, is based on four items and available for 67 countries. Its Cronbach's alpha is .75. The sample size can be substantially increased when Item 4 on "big interests" is excluded. We exclude this item, thereby increasing the country coverage from 67 to 104; the correlation between the three-item factor score and the four-item factor score is .97, suggesting that this exclusion does not affect relative country rankings. In the remainder, we prefer to use the three item-based Distrust-Trust dimension to maximize country coverage.

We re-scale the three dimensions on a 0 to 100 scale for ease of interpretation. Higher scores on the first dimension of Collectivism–Individualism imply higher scores on Hofstede's Individualism (and lower on Power Distance). Higher scores on the second dimension Duty-Joy coincide with higher scores on Indulgence/Short-Term Orientation (and lower on Restraint/Long-Term Orientation). Higher scores on the third dimension Distrust-Trust mean lower scores on Hofstede's Uncertainty Avoidance. We find that the dimensions correlate high with the original Hofstede dimensions, and low with one another (see Table A5 in the online appendix). The correlations between the newly developed dimensions are lower than the correlations among the items included in each dimension, showing convergent and discriminant validity (Fornell & Larcker, 1981). We consider construct validity of sufficient quality to continue working with these three dimensions. A cluster analysis for 86 countries on the basis of our dimensions is in line with intuition and previous clustering attempts (Ronen & Shenkar, 2013), thus increasing the credibility of these newly created dimensions (see the online appendix).

Having established which items are included in what dimension, we went back to the original survey data. We have full data on all three dimensions for 86 countries. In addition, there are 16 countries with one item missing in the construction of the first dimension (13 countries in which Question 1—live to make parents proud—was never asked, and 3 countries in which Question 5—on jobs and preference for own nationals—was never asked). By imputing scores for these single items in these 16 countries, we are able to generate scores on all three dimensions for 102 countries (vs. 86 countries). As our regression results reported below are not affected by data imputation, we decide to *estimate* the country score on this item and then calculate the score on the overall Collectivism–Individualism dimension for these 16 countries. In the online appendix (Table A6), we explain our data imputation technique, and show that this imputation of one item for the first dimension and 16 countries does not affect our main conclusion. The wave-averaged scores for all countries can be found in Table A9 in the online appendix.[12]

Contextualizing and Labeling of the Dimensions

The First Dimension: Collectivism–Individualism

Conceptually, the Collectivism–Individualism dimension describes "the relationship between the individual and the collectivity" (Hofstede, 2001, p. 209), in particular the "extent to which people are autonomous individuals or embedded in their groups" (Triandis & Gelfand, 2012, p. 499). In collectivist cultures, people perceive themselves as closely linked to their in-group, tend to take the norms and duties prevalent in the in-group as guiding, and attach high importance to their relationship with other members of their in-group. Individualist cultures replace the individual's dependence on particular support groups, especially family and acquaintances, by a more anonymous form of dependence on impartial institutions and universal norms. Impartiality and universalism liberate people from obligations to the extended family. Communal affiliations and commitments continue but are chosen rather than imposed. People set their own goals rather than looking to fulfill the expectations of others (Hofstede, 2001; Triandis, 1995; Welzel,

2013, chapter 6). There is a high tolerance of deviation from specific in-group norms, and a low emphasis on conformity and obedience, again especially to expectations from parents or other family (Hofstede, 2001; Triandis, 2001). Brewer and Venaik (2011) find that Hofstede's Individualism captures two aspects, one of which is related to the close circle of family and friends and one that is related to societal institutions in general. We observe a similar pattern in our WVS-EVS analysis.

The first of the five items included in the first dimension concerns the fraction of people who disagree with the statement that one of the main goals in life is to make one's parents proud. The second item is the extent to which the respondent agrees that private ownership of business should be increased. These two questions on private versus government ownership and making parents proud are not only correlated with Hofstede's Individualism, but also related to the measurement items used by Globe in their attempt to operationalize Individualism (House et al., 2004).

The third and fourth items concern the extent to which people in a country find abortion and homosexuality justifiable, effectively capturing individual self-determination in sexual matters versus patriarchal sex norms. Similarly, Globe uses two questions on individual expression versus group norms (one question deals with the preference for individual versus team sports, and one with the importance of group cohesion versus Individualism). The questions on justifiability of homosexuality and abortion fit the notion of individual expression versus patriarchal norms well. The fifth item relating to the preference given to own nationals when jobs are scarce captures the parochialism and group-egoism that is inherent in Collectivism at the opposite pole of Individualism.

These items capture the notion of Power Distance as well. Specifically, the item asking respondents whether they feel that one lives to make parents proud captures the notion of obedience and hierarchy in the family sphere. Although none of the three questions originally used by Hofstede relate to hierarchy in the family, Hofstede has argued that Power Distance extends to the family (Hofstede, 2001). The question as to whether nationals are privileged over immigrants when jobs are scarce is directly related to the definition of Power Distance as given by Globe. According to Globe, high Power Distance is associated with a society that is differentiated into class, and a society in which resources are available to only a few.

Hofstede (2001) relates his Individualism dimension to autonomy and self-orientation, the right to a private life, weak family ties, less conformity behavior, individual incentives, and market capitalism and competition, and Power Distance to parents teaching children obedience, and the existence of hierarchy and privileges in society (Hofstede, 2001).

Finally, we correlate the country scores on the Individualism dimension with a set of additional items from WVS-EVS. The additional items refer to selected questions in WVS-EVS. The reason why these additional questions are excluded from the new dimensions is their limited availability across waves and/or countries. Results are summarized in Table 5.

Individuals with values typically found in societies that score high on the first dimension tend to feel that religion is not important, that responsibility is an important child quality, and that it is important to be successful. Countries scoring low on the first dimension having more traditional-collectivist values believe in God and feel that respect is important in a job and that obedience is an important child quality. This first dimension captures beliefs about social structures, which is one of Kluckhohn and Strodtbeck's (1961) classic cultural dimensions. It relates to traditional-collectivist values on the lower end of the scale, and individual-liberal values on the upper end of the scale. We decide to label the first dimension Collectivism–Individualism capturing traditional-collectivist versus liberal-individualist values.

The Second Dimension: Duty-Joy

The second dimension includes all three items used by Hofstede when measuring IVR, and one of the three items when measuring LTO. As a result, this second dimension correlates very high with IVR (.92) and moderately high with LTO (–.35).

Table 5. Country-Level Correlations of Additional Items With the Three Dimensions.

	Hofstede's original labels	Newly suggested labels	Countries scoring high on the respective dimension also score high on . . .
Dimension 1			
Low	Power distance	Collectivism	Religious faith is an important child quality (.77; $N = 94$) They believe in God (.59; $N = 78$) Obedience is an important child quality (.56; $N = 94$) It is important to live in secure surroundings (.60; $N = 74$) It is important to always behave properly (.73; $N = 74$) Tradition is important (.69; $N = 74$) Respect is important in a job (.69; $N = 65$) People who don't work turn lazy (.68; $N = 60$)
High	Individualism	Individualism	Religion is not important at all (.84; $N = 94$) Feeling of responsibility is an important child quality (.40; $N = 94$) It is important to be successful (.75; $N = 74$) Good pay is not that important in a job (.49; $N = 65$) Men do not make better managers than women (.75; $N = 75$) Consider themselves an atheist (.47; $N = 94$)
Dimension 2			
Low	Restraint	Duty	People are in need because they are lazy (.35; $N = 48$) Having experts make decisions in a democracy is good (.39; $N = 91$) Hard work is an important child quality (.50; $N = 94$)
High	Indulgence	Joy	Tend to live in bigger cities (.30; $N = 85$) Democracy is absolutely important (.47; $N = 76$) A good income is not that important in a job (.59; N=80) Having new ideas and being creative is important (.30; $N = 75$) Imagination is an important child quality (.32; $N = 94$)
Dimension 3			
Low	Uncertainty avoidance	Distrust	Politics is not important in life (.47; $N = 92$) Positions himself/herself on the right of a political scale (.29; $N = 90$) Democracies are indecisive (.32; $N = 62$)
High	Uncertainty avoidance	Trust	Work is a duty toward society (.33; $N = 59$) Democracies are good at maintaining order (.41; $N = 63$) Avoiding a fare on public transport is never justifiable (.38; $N = 90$)

Note: Pairwise correlations are at the country level and are significant at 1%. Correlations based on the wave-averaged country-level scores on the additional questions taken from all World Values Surveys. Number of countries is mentioned between parentheses.

> Indulgence stands for a tendency to allow relatively free gratification of basic and human desires related to enjoying life and having fun. Its opposite pole, restraint, reflects a conviction that such gratification needs to be curbed and regulated by strict social norms. (Hofstede et al., 2010, p. 281)

Hofstede et al. (2010) stress that this dimension refers to enjoying life and having fun, not to gratifying human desires in general. Hofstede himself believes that societies with a short-term focus tend to be indulgent, whereas societies characterized by a long-term focus tend to be more restraint. Based on Florida's (2002) work on how members of the growing "creative class" in

postindustrial economies blend Bohemian with Puritan values, we doubt that indulgence automatically includes a Short-Term Orientation. Indeed, people can be hard working out of passion and plan for the future and nevertheless indulge in joyful moments in life.

A correlation between the country scores on this dimension and other WVS-EVS items shows that countries that score low on this second dimension (i.e., emphasizing restraint) score high on the importance of hard work as an important child quality, and that people are in need because they are lazy. Individuals with values typically found in societies that score high on this dimension (i.e., less restraint, more indulgence) tend to live in bigger cities, do not find a good income important in a job, embrace democracy, and find imagination an important child quality. This second dimension also captures beliefs about proper goals in life (living also for the moment, that is, joy) thereby capturing two classic cultural dimensions (Kluckhohn & Strodtbeck, 1961). Given the content and meaning of the items included and associated with this dimension, we decide to label this second dimension: Duty–Joy. The decision to label this dimension Duty-Joy is in line with the fact that the items included are closely related to Hofstede's IVR (all three items of his IVR dimension are included in our second dimension) and less so to Hofstede's Long-Term Orientation (of which we only include one of the three items for reasons explained earlier).

The Third Dimension: Distrust–Trust

The third dimension reflects Uncertainty Avoidance versus Acceptance, relating to the degree to which members of society are comfortable in unstructured situations, or if such situations create stress and anxiety. A recent replication of the Uncertainty Avoidance dimension using data from the European Social Survey highlights the relevance of anxiety and stress (Minkov & Hofstede, 2014). Venaik and Brewer (2010) also conclude that Hofstede's Uncertainty Avoidance captures both the stress and anxiety aspect of Uncertainty Avoidance and the rule and order orientation. The items in our analysis represent these aspects of Uncertainty Avoidance. We find three items, of which the first two capture the confidence that people have in political parties and the justice system. High Uncertainty Avoidance is associated with low confidence in these two institutions. These questions capture the notion of rule and order orientation and the importance of well-functioning political and legal institutions. One would note that this importance of rule and order also returns in the questions used by Globe when measuring Uncertainty Avoidance (e.g., "I believe that society should have rules or laws to cover situations"). The third item measures the degree of social trust. As Hofstede himself argued, any replication of the Uncertainty Avoidance dimension "should be closely associated with national measures of interpersonal trust" (Minkov & Hofstede, 2014, p. 165). High Uncertainty Avoidance is associated with a large fraction of people saying that generally speaking you cannot trust people and need to be careful in dealing with people. All items fit Hofstede's description of the Uncertainty Avoidance dimension well. High Uncertainty Avoidance is correlated with children learning that the world is hostile (Hofstede, 2001), a fear of failure, and a preference for tasks with no risks. Moreover, citizens lack confidence in civil service and feel that the law is usually against them.

The correlation between the country score of this third dimension with additional WVS-EVS items shows (see Table 5) that countries in which people tend to have higher levels of trust and confidence also feel that work is a duty toward society, position themselves on the left of a political scale, and feel that democracies are good at maintaining order. Countries that score low on this third dimension are generally on the right end of the political scale, and feel that democracies are indecisive. This third dimension captures beliefs about the nature of human behavior, a classic cultural dimension (Kluckhohn & Strodtbeck, 1961). The anchors of this dimension reflect societies based on anxiety and uncertainty versus societies based on trust and institutional confidence capturing both institutional and social trust (Beugelsdijk, 2006; Nannestad, 2008). Acknowledging that the label may be imperfect but for lack of a better terminology, we decide to

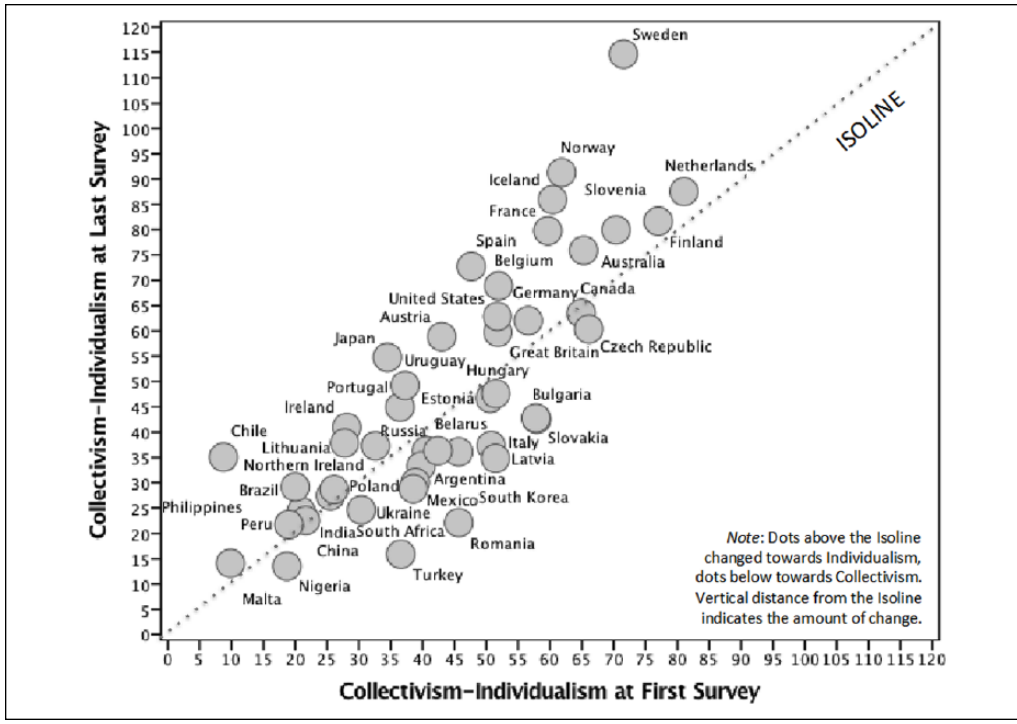


Figure 1. Cultural change for Collectivism–Individualism.
Note: Dots above the Isoline changed toward Individualism, dots below toward Collectivism. Vertical distance from the Isoline indicates the amount of change.

label this third dimension Distrust (a low score) versus Trust (a high score). Using the Trust label for this dimension resonates well with the vast literature on trust in economics (e.g., Zak & Knack, 2001), political science (e.g., Fukuyama, 1995; Putnam, 1993, 2000), and sociology (e.g., Delhey & Newton, 2005).

Inglehart's Dynamics: Intergenerational Culture Shift

Assessing Cultural Change

We first compare the country scores on each dimension over time by calculating the scores for each country at the time the first survey wave was held, and at the time the last survey wave was held. To allow for generational change to happen, we only include those countries for which the time period between the first and last survey is at least 15 years.[13] The number of countries that has been surveyed *repeatedly* by WVS/EVS is smaller than the total number of countries surveyed. The minimum of 15 years reduces the sample size considerably.

Consistent with our theory, we expect country scores on Collectivism–Individualism and Duty–Joy to increase over time. For Collectivism–Individualism, the score increases by four points from 44 in the first wave to 48 in the last wave ($N = 46$ countries). The score on the Duty–Joy dimension is on average 11 points higher at the time of the last survey wave compared to the first survey wave ($N = 47$ countries). The Distrust–Trust dimension is 10 points lower ($N = 44$). Over a period of at least 15 years, these countries score higher on Individualism and Joy, and lower on Trust.

Figure 1 depicts the scores of 46 countries on the Collectivism–Individualism dimension at the time when the first survey was held in each country and the time that the last survey was held.

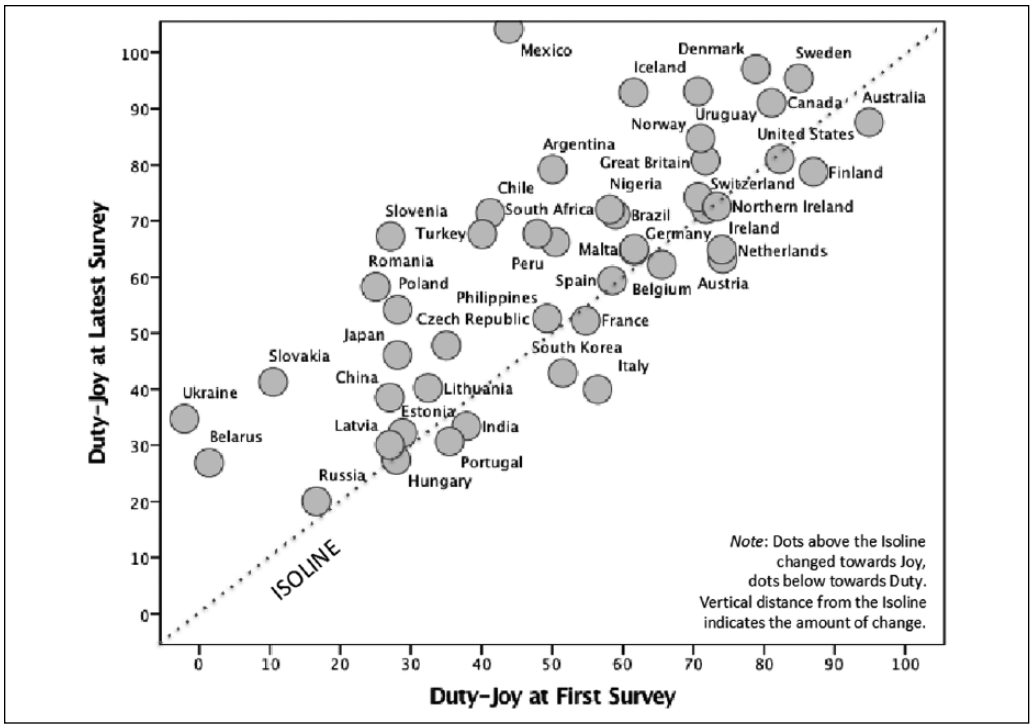


Figure 2. Cultural change for Duty–Joy.
Note: Dots above the Isoline changed toward Joy, dots below toward Duty. Vertical distance from the Isoline indicates the amount of change.

We also include the 45° line. The horizontal axis depicts the score on the Collectivism–Individualism dimension for the first survey wave. The vertical axis shows the score on this dimension for the last survey wave. We draw similar graphs for the Duty–Joy dimension ($N = 47$ countries), and the Distrust–Trust dimension ($N = 44$ countries). Figure 2 shows the results for Duty–Joy and Figure 3 for Distrust–Trust.

A visual inspection of these figures highlights two interesting observations. First, countries tend to shift "north" of the 45° line for the Collectivism–Individualism dimension and especially for the Duty–Joy dimension, while countries tend to shift "south" of the 45° line for the Distrust–Trust dimension. This finding is supportive of the notion that societies have gone through a period of cultural change over the time span of approximately one generation. Second, as the countries' level of economic development increases, the score on Collectivism–Individualism (Figure 1), Duty–Joy (Figure 2), and Distrust–Trust (Figure 3) tends to increase. This is confirmed by the positive correlation between gross domestic product (GDP) per capita and Collectivism–Individualism (.71), Duty–Joy (.51), and Distrust–Trust (.24).Although the changing scores on each of the dimensions over a 15-year period are suggestive of a generational effect, we should be careful when interpreting these patterns. To unpack such shifts over time, we need to define generational cohorts more precisely and formally test for the presence of such cohort effects when explaining cultural differences. We follow Inglehart (1990) and assume that "one's basic values reflect the conditions that prevailed during one's pre-adult years" (p. 68) and remain relatively stable after that. This socialization hypothesis assumes that values take shape during adolescence and tend to become more stable as people age, so that similar cohort differences are visible at different cross-sections in time (Bengtson, 1975). Without being clearly

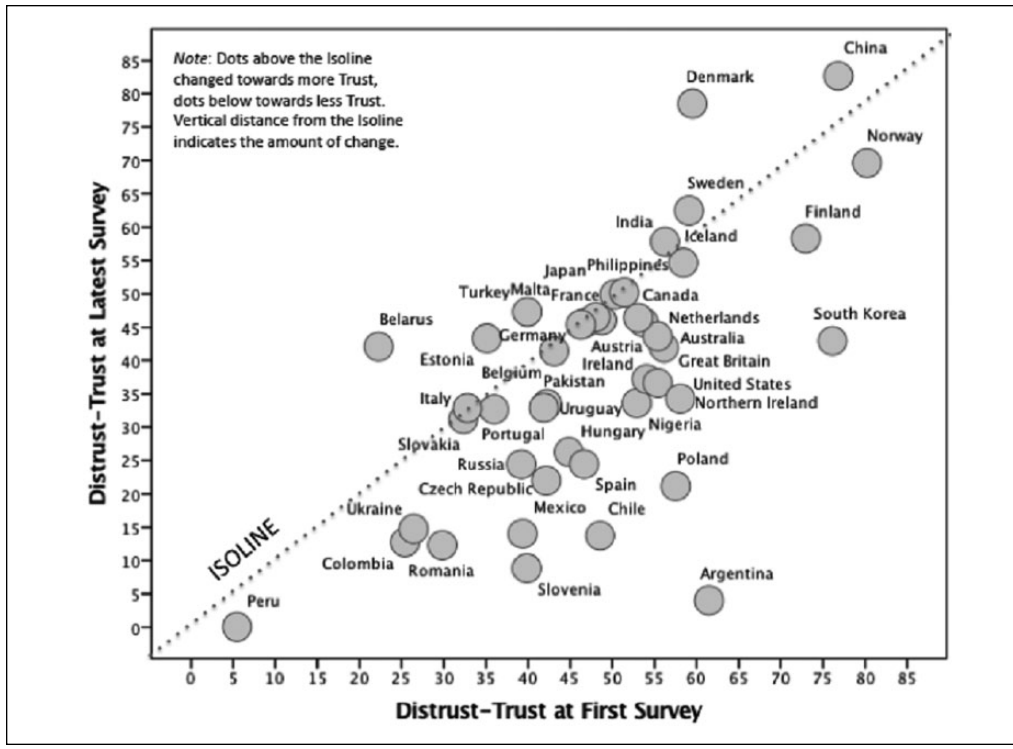


Figure 3. Cultural change for Distrust–Trust.
Note: Dots above the Isoline changed toward Trust, dots below toward less Trust. Vertical distance from the Isoline indicates the amount of change.

demarcated, different generations are associated with different values. Drastic events may affect generations differently and different generations may therefore have different fixpoints around which they adjust their values to changing circumstances (Hofstede, 1980). We define five birth cohorts, each covering a period of 20 years. These generational cohorts roughly correspond with the generations as commonly defined (Parry & Urwin, 2011; Smola & Sutton, 2002). Data on all birth cohorts covering the entire 20th century is available for 21 countries. The coverage is limited for the first cohort (1900-1919).

For each of the three dimensions, we plot the cohort scores for the earliest survey year possible (1980 for Distrust–Trust and 1990 for Collectivism–Individualism and Duty–Joy) and the latest year (2010). For comparability, the sample is the same in each survey round. As cutting the sample by (a) cohort, (b) survey year, and (c) country does not yield a sufficient number of observations per cohort, we keep the sample of countries the same in each survey round and compare the overall group of countries. Although this approach reduces sample size considerably, it allows us to explore (a) *life cycle* effects, (b) *cohort-replacement* effects, and (c) *time-trend* effects in separation. Looking at Individualism, for instance, a *life cycle effect* implies that younger people always start out at a relatively high level of Individualism but then turn less individualistic as time passes by. A *cohort-replacement* effect means that younger cohorts enter the population at higher levels of Individualism than older ones and remain more individualistic over time. A time-trend effect means that all cohorts turn more individualistic with the passage of time.

As already shown in Figures 1 to 3, the mean score for Collectivism–Individualism and Duty–Joy has increased over the 1990-2010 period and the mean score for Distrust–Trust has decreased

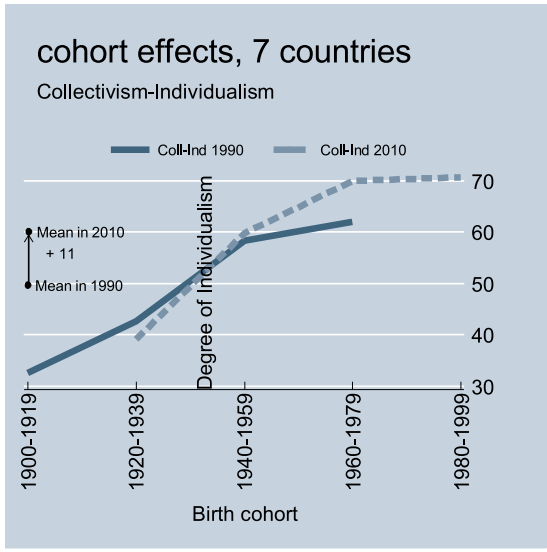


Figure 4. Cohort effects 1990 and 2010; Collectivism–Individualism.
Note: The sample consists of seven countries (Austria, Belgium, Czech Republic, Germany, Great Britain, Spain, and the United States).

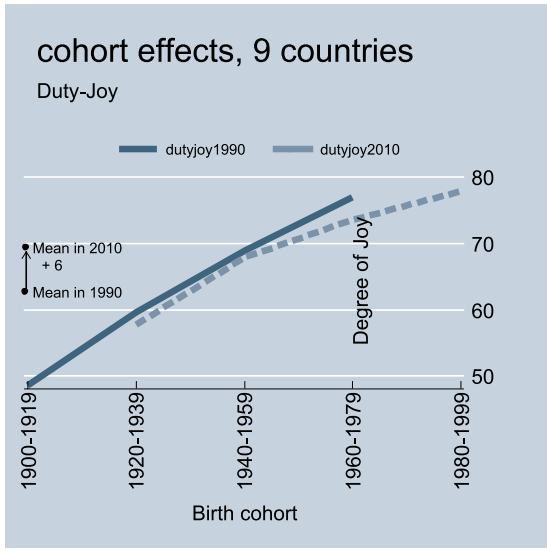


Figure 5. Cohort effects 1990 and 2010; Duty–Joy.
Note: The sample consists of nine countries (Austria, Belgium, Czech Republic, Denmark, Germany, Great Britain, Spain, Switzerland, and the United States).

in that period. This increase on Individualism and Joy suggests there is no evidence that the upward-sloping cohort patterns during the earliest survey reflect a life cycle effect. Otherwise, the younger cohorts' higher scores on Individualism and Joy during the earliest survey would have to be declining as these cohorts aged, which is not at all the case.

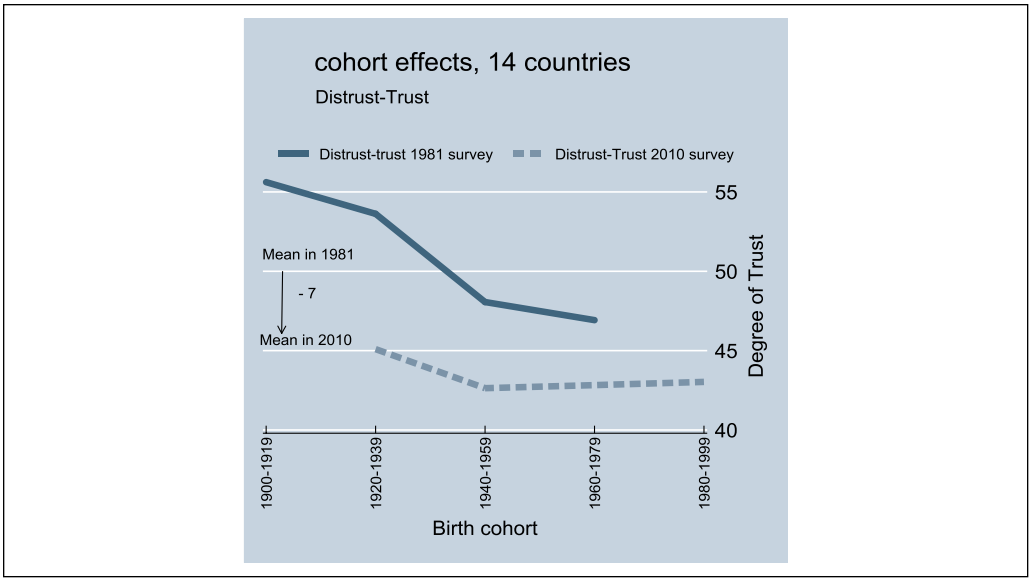


Figure 6. Cohort effects 1980 and 2010; Distrust–Trust.
Note: The sample consists of 14 countries (Australia, Belgium, Denmark, France, Germany, Great Britain, Ireland, Italy, Japan, Netherlands, Norway, Spain, Sweden, the United States).

In the absence of a life cycle decline, cohort replacement over time alone suffices to shift the population mean upward on the first two cultural dimensions. The reason is simple: at the later point in time, the population is composed to a larger extent of the higher scoring younger cohorts on Individualism and Joy and to a lesser extent of the lower scoring older cohorts. For Individualism and Joy, the upward shift in the population mean is almost exclusively due to cohort replacement. This is obvious from the fact that the upward-sloping cohort patterns in Individualism and Joy remain basically unchanged and run closely parallel throughout the two points in time. This means that there is no supporting time-trend effect in Individualism and Joy, so that cohort replacement alone shifted the mean upward. As cohort replacement happens at a glacial pace (especially in the face of rising life expectancies), the upward shift is modest.

The pattern for Trust is different. Given the downward-sloping cohort pattern in the earliest survey and given that there is no life-cyclical decline in Trust as cohorts age, mere cohort replacement would have shifted downward the mean level of Trust over time. But here, the cohort-replacement effect is supported by a rather massive time-trend effect: from the earliest to the latest survey, Distrust has been growing in all cohorts merely as a matter of time passage. Interestingly, the time trend has affected the older cohorts in the earliest survey more than the younger cohorts, for which reason the cohort differences appear evened out at the latest survey.

Cultural Change Across Countries: A Five Cohort Analysis

We have data on *all* three dimensions for 68 countries for four cohorts, and limited data for the first cohort for 21 countries. Figures 7 to 9 show the scores on the three replicated dimensions for five birth cohorts during the time span 1900-1999 (there are not enough observations before 1900 to include the 1881-1899 birth cohort). The minimum number of respondents per country in each birth cohort is 100. As a graph for all 68 countries separately would be unreadable, we have collapsed countries in five groups based on their economic history in the 20th century. We define advanced postindustrial democracies ($N = 25$), developing societies ($N = 12$), low-income

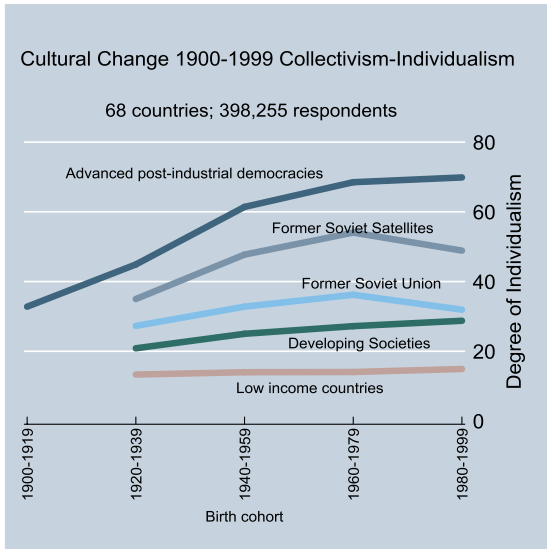


Figure 7. Cultural change Collectivism–Individualism.

Note: Advanced postindustrial democracies ($N = 25$; $N_{respondents} = 153{,}868$) include *Australia, Austria, Belgium, Canada, Denmark*[a], Finland, *France*[a], *Germany, Great Britain*, Greece, Iceland, *Ireland, Italy*[a], Japan, Luxemburg, *the Netherlands*, New Zealand, *Norway, Portugal*, South Korea, *Spain*, Sweden, Switzerland, Taiwan, *United States*. Countries in italics are used in the first cohort ($N = 15$; $N_{respondents} = 108{,}064$). Former Soviet Satellites ($N = 9$; $N_{respondents} = 51{,}008$) include Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia. There is no reliable data available to calculate a score for the first cohort. Former Soviet Union ($N = 15$; $N_{respondents} = 81{,}978$) include Albania, Armenia, Azerbaijan, Belarus, Bosnia, Bulgaria, Georgia, Kyrgyzstan, Macedonia, Moldova, Montenegro, Romania, Russia, Serbia, and Ukraine (only the score of Russia [32] is known for the first cohort). Developing societies ($N = 12$; $N_{respondents} = 74{,}071$) include Argentina, Brazil, Chile, China, Iran, Mexico, Singapore, South Africa, Thailand, Turkey, Uruguay, and Venezuela. There is no reliable data available to calculate a score for the first cohort. Low-income countries ($N = 7$; $N_{respondents} = 37{,}330$) include Egypt, India, Indonesia, Nigeria, Peru, Philippines, and Vietnam. There is no reliable data available to calculate a score for the first cohort.

[a]For the first cohort, items are unavailable for these seven countries and/or the number of respondents is less than 100. For Denmark, France, and Italy, the first item is missing, and the number of observations for the second item is 94, 88, and 75, respectively.

countries ($N = 7$), and ex-communist countries. We split the latter group in former Soviet Union ($N = 9$) and former Soviet Satellites ($N = 15$). We define these groups based on their economic history (Inglehart & Baker, 2000). The advanced postindustrial democracies had an average GDP per capita of 3,855 in 1930 and 15,897 in 1990 (based on the historical GDP per capita series expressed in 1990 international dollars, and provided by the Maddison Project Database, 2013).[14] These countries experienced a substantial growth of income over this period (i.e., growth by Factor 4). Developing societies experienced a modest economic growth of Factor 3, while the group of low-income countries grew by Factor 2. Similar to the Developing Societies, the average income in the ex-communist countries increased threefold, though at an absolute lower level.

As Figure 7 shows, the young score higher on the Collectivism–Individualism dimension than the old in advanced postindustrial democracies and ex-communist countries. As one would expect given the lagging economic growth, the effect is less pronounced for developing societies. For the 1920-1999 period, we find the slope for the low-income countries to be less steep than for the countries that have experienced faster economic growth, a result found by Inglehart and Welzel (2005) as well. The youngest generation of ex-communist countries (i.e., people born between 1980 and 1999) has values that are slightly less individualistic than the generation before. A closer look at the underlying items in this first dimension shows that

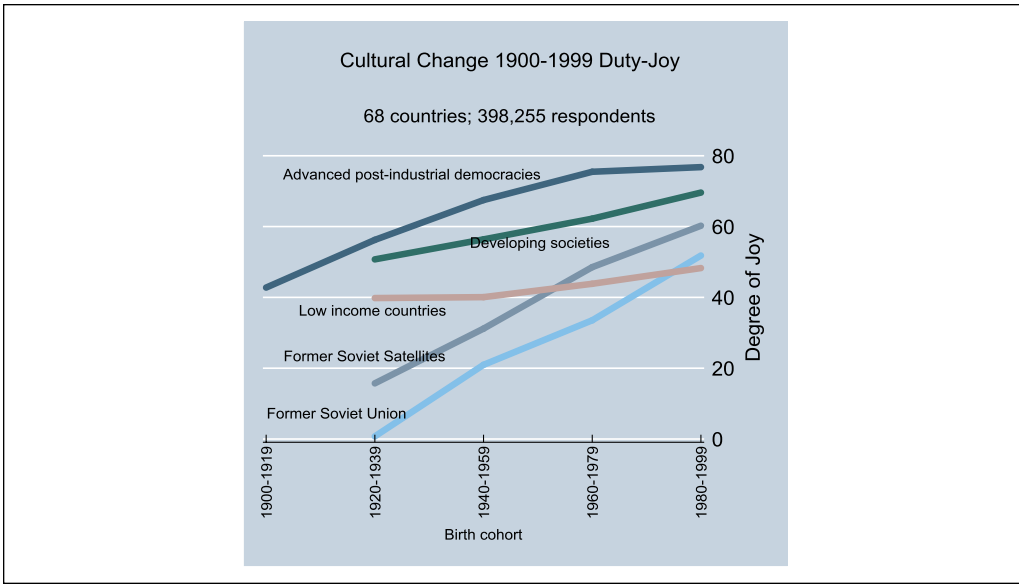


Figure 8. Cultural change Duty–Joy.

Note: Advanced postindustrial democracies ($N = 25$; $N_{respondents} = 153{,}868$) include *Australia, Austria, Belgium, Canada, Denmark*[a], Finland, *France*[a], *Germany, Great Britain*, Greece, Iceland, *Ireland, Italy*[a], Japan, Luxemburg, *the Netherlands*, New Zealand, *Norway, Portugal*, South Korea, *Spain*, Sweden, Switzerland, Taiwan, *the United States*. Countries in italics are used in the first cohort ($N = 15$; $N_{respondents} = 108{,}064$). Former Soviet Satellites ($N = 9$; $N_{respondents} = 51{,}008$) include Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia. There is no reliable data available to calculate a score for the first cohort. Former Soviet Union ($N = 15$; $N_{respondents} = 81{,}978$) include Albania, Armenia, Azerbaijan, Belarus, Bosnia, Bulgaria, Georgia, Kyrgyzstan, Macedonia, Moldova, Montenegro, Romania, Russia, Serbia, and Ukraine (only the score of Russia [–30] is known for the first cohort). Developing societies ($N = 12$; $N_{respondents} = 74{,}071$) include Argentina, Brazil, Chile, China, Iran, Mexico, Singapore, South Africa, Thailand, Turkey, Uruguay, and Venezuela. There is no reliable data available to calculate a score for the first cohort. Low-income countries ($N = 7$; $N_{respondents} = 37{,}330$) include Egypt, India, Indonesia, Nigeria, Peru, Philippines, and Vietnam. There is no reliable data available to calculate a score for the first cohort.

[a]For the first cohort, items are unavailable for these seven countries and/or the number of respondents is less than 100. For Denmark, France, and Italy, the first item is missing, and the number of observations for the second item is 94, 88, and 75, respectively.

especially on the question regarding state versus private ownership and the two questions on justifiability of homosexuality and abortion, the youngest generation is markedly more collectivist, less individualistic than the previous generation, an observation that has been made before (e.g., Taylor, 2014).

Figure 8 shows the values of the Duty–Joy dimension. There is a clear pattern of a significant culture shift in the direction from Duty to Joy. Despite this shift toward Joy, young people in ex-communist countries are still more duty-oriented than young people in advanced postindustrial democracies. The slopes are upward and the lines move parallel. Intergenerational change in the Duty–Joy dimension is almost absent in low-income societies and minimal for developing societies, highlighting the relevance of economic development for developing joyous orientations.

Figure 9 shows the scores on the Distrust–Trust dimension for the same five birth cohorts. Trust and confidence levels are rather high among people born before 1940, but decrease for younger generations. Ex-communist countries have the lowest level of trust and the highest level of distrust, while advanced postindustrial democracies have the highest levels of trust and the lowest level of distrust. The low score for ex-communist societies is not surprising given the notorious inefficiency of the Soviet system before it collapsed. This is clearly reflected in the two

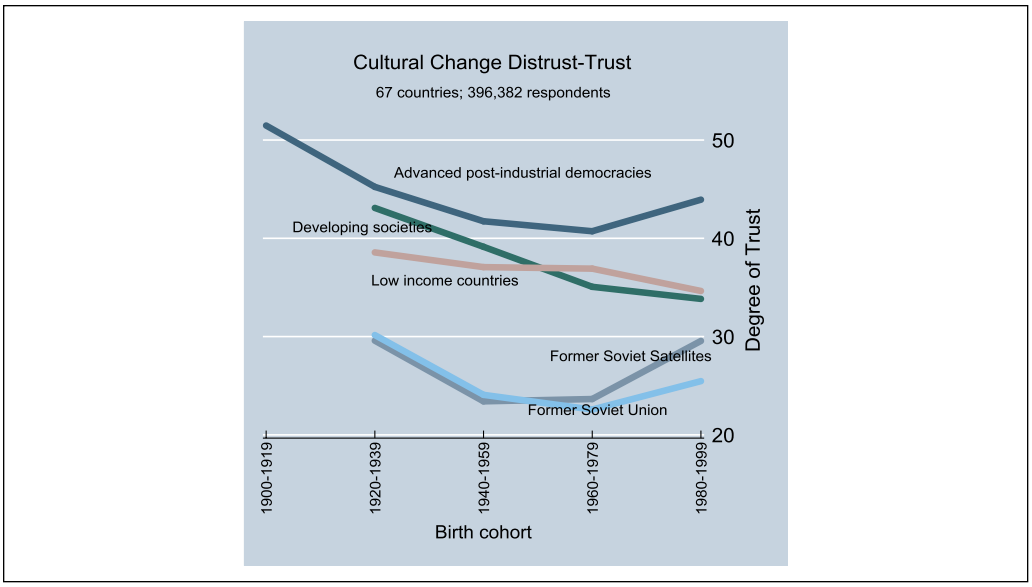


Figure 9. Cultural change Distrust–Trust.
Note: Advanced postindustrial democracies ($N = 25$; $N_{respondents} = 153{,}868$) include *Australia, Austria, Belgium, Canada, Denmark*[a], Finland, *France*[a], *Germany, Great Britain*, Greece, Iceland, *Ireland, Italy*[a], Japan, Luxemburg, the *Netherlands*, New Zealand, *Norway, Portugal*, South Korea, *Spain*, Sweden, Switzerland, Taiwan, *the United States*. Countries in italics are used in the first cohort ($N = 15$; $N_{respondents} = 108{,}064$). Former Soviet Satellites ($N = 9$; $N_{respondents} = 51{,}008$) include Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia. There is no reliable data available to calculate a score for the first cohort. Former Soviet Union ($N = 15$; $N_{respondents} = 81{,}978$) include Albania, Armenia, Azerbaijan, Belarus, Bosnia, Bulgaria, Georgia, Kyrgyzstan, Macedonia, Moldova, Montenegro, Romania, Russia, Serbia, and Ukraine (only the score of Russia [46] is known for the first cohort). Developing societies ($N = 12$; $N_{respondents} = 74{,}071$) include Argentina, Brazil, Chile, China, Iran, Mexico, Singapore, South Africa, Thailand, Turkey, Uruguay, and Venezuela. There is no reliable data available to calculate a score for the first cohort. Low-income countries ($N = 6$; $N_{respondents} = 35{,}457$) include Egypt, India, Indonesia, Nigeria, Peru, and Philippines. There is no reliable data available to calculate a score for the first cohort. We exclude Vietnam here given its very high (outlier) score on the Distrust–Trust dimension (see the online appendix for additional information).
[a]For the first cohort, items are unavailable for these seven countries and/or the number of respondents is less than 100. For Denmark, France, and Italy, the first item is missing, and the number of observations for the second item is 94, 88, and 75, respectively.

generations socialized under the communist regime (1940-1960, and 1960-1980) that have the lowest score on the Distrust–Trust dimension.

All three figures suggest that cultural change occurs and that societies generally tend to move in similar directions. The persistent difference between ex-communist countries and advanced postindustrial democracies highlights the role of history. Moreover, the difference in slopes between advanced postindustrial democracies and developing societies underscores the relevance of economic development for cultural change. The question arises to what extent cultural change is driven by autonomous cohort effects, economic development or country-specific historical trajectories. To that end, we perform a panel-based regression analysis.

Explaining National Cultural Differences

Economic Development

We assess the relative contribution of level of economic development and unique country-specific effects by estimating a fixed-effects panel model. By estimating a fixed-effects model, we control for all other possible characteristics of countries such as their unique country-specific

history (including ex-communism) and geography (e.g., climatic conditions). A fixed-effects model here is the most powerful and simplest model to explain culture shifts. The Hausman test (Greene, 2008) for fixed versus random effects model confirms that the fixed effect model is the preferred method compared with a random effects model ($\chi^2 = 20.44$, $p < .000$; full details can be found in Table A7 in the online appendix). We explore the nature of these fixed effects in the next section. A test for the impact of cohort-specific effects indicates that these are significantly different from zero, underscoring the relevance to include the cohort-specific effects in our panel regression. These cohort-specific effects capture the generational shift conditional on the level of economic development and unique country-specific factors. An increasing (and significant) effect size of the cohort effect on, for example, the Duty–Joy dimension means that each generation is more joyous than the previous generation. Finally, we control for first order autocorrelation by estimating a fixed effect panel with cluster adjusted standard error (Greene, 2008).[15]

We have two panels: a balanced one of 65 countries for four birth cohorts covering the 1920-1999 period, and an unbalanced one for 95 or 96 countries (depending on dimension) for all five cohorts.[16] The latter is unbalanced as it does not include scores for all countries and/or all cohorts. In both cases, cohorts are only included when at least 100 respondents are included in each cohort. The final result is shown in Table 6. We would note that we have also used the two alternative combinations of items in the construction of our Collectivism–Individualism dimensions as dependent variables. Detailed results are shown in Table A4 in the online appendix. Overall, our findings reported in Table 6 are robust to inclusion or exclusion of items as discussed in "Hofstede's Dimensions: A WVS-EVS Based Re-Examination" section.

We estimate three models, one for each cultural dimension. Models 1 (Collectivism–Individualism), 4 (Duty–Joy), and 7 (Distrust–Trust) explain national cultural differences by level of economic development (log GDP per capita) in a balanced sample including country-fixed effects. GDP per capita data match each cohort, that is, the 1920-1939 cohort is matched with GDP per capita data referring to 1930, and similarly, the 1980-1999 cohort is matched with GDP per capita data referring to 1990. Doing so, we make sure level of economic development is measured when each cohort is in its formative years. Comparative historical GDP data are taken from the Maddison Project 2013 Update (Bolt & van Zanden, 2014).[17] The second series of models (Models 2, 5, and 8) show results for the balanced panel for 65 countries including GDP per capita, country-fixed effects, and now include cohort-fixed effects. The third and final series of models (3, 6, and 9) show results for the *un*balanced panel maximizing the number of observations. Depending on the cultural dimension, the number of countries is either 96 (for Collectivism–Individualism and Duty–Joy) or 95 (for Distrust–Trust).

In all models, the vast majority of the variance in the scores on cultural dimensions is due to differences *across* countries (93% for Collectivism–Individualism; 86% for Duty–Joy; 91% for Distrust–Trust). A non-negligible part of this cross-country variation is due to country-fixed effects. Approximately 50% of the variation in Collectivism–Individualism and Duty–Joy is explained by GDP per capita and cohort-fixed effects. The other 50% is explained by country-fixed effects. For Distrust–Trust, we find the largest contribution of the country-fixed effects, a result in line with our earlier observation on the relative stability of this Distrust–Trust dimension across generations.

We find a significant relation between level of economic development and the Collectivism–Individualism dimension ($\beta = 3.30$; $p < .01$) and the Duty–Joy dimension ($\beta = 9.29$; $p < .001$). The relation between GDP per capita and Distrust–Trust is marginally significant ($\beta = 2.76$; $p < .10$). A visual inspection of the scatter plots corroborates these statistical findings (see Figures 1a, 1b, and 1c in the online appendix). Using the results of the unbalanced panel (Models 3, 6, and 9), a comparison of GDP per capita in Cohort 5 between the United States and Thailand (the sample average) shows that the higher level of economic development in the United States is associated with a 5-point difference in Collectivism–Individualism (the United States is 5 points

Table 6. Fixed Effect Panel Regression.

	Collectivism–Individualism			Duty–Joy			Distrust–Trust		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
GDP per capita (log)	8.1*** (0.84)	4.92** (1.52)	3.30** (1.19)	18.26*** (1.51)	8.61** (2.88)	9.29*** (2.29)	−1.62* (0.77)	1.98 (2.14)	2.76† (1.48)
Cohort 1900-1919		NA	reference category		NA	reference category		NA	reference category
Cohort 1920-1939		reference category	16.77*** (2.38)		reference category	8.44** (2.66)		reference category	−9.46*** (1.72)
Cohort 1940-1959		8.35*** (0.94)	25.64*** (2.46)		10.05*** (1.28)	18.32*** (2.99)		−4.89*** (0.82)	−13.92*** (1.94)
Cohort 1960-1979		9.41*** (1.77)	27.22*** (2.63)		13.41*** (3.15)	20.55*** (3.73)		−7.78** (2.40)	−17.87*** (2.51)
Cohort 1980-1999		6.43** (2.88)	25.65*** (2.71)		18.13*** (4.3)	25.26*** (4.21)		−6.11† (3.43)	−17.36*** (2.84)
Constant	−25.27*** (6.90)	−5.17 (11.73)	−15.66† (9.37)	−99.52*** (12.43)	−30.64* (21.94)	−43.15* (16.92)	−50.88*** (6.40)	−75.78*** (16.11)	−71.28*** (10.88)
Number of observations	260	260	364	260	260	364	260	260	360
Number of countries	65	65	96	65	65	96	65	65	95
Number of cohorts	4	4	5[a]	4	4	5[a]	4	4	5[a]
Country-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Explained variance without country-fixed effects	.45[b]	.53	.51	.47[b]	.48	.39	.01[b]	.02	.05[c]
Total explained variance	.94	.96	.96	.91	.93	.93	.92	.93	.94

Note: Cluster adjusted standard errors in parentheses. Cohort specific effects are estimated relative to Cohort 1 (Models 3, 6, and 9) and Cohort 2 (Models 2, 5, and 8). GDP = gross domestic product.
[a]Unbalanced panel.
[b]Excludes country *and* cohort-fixed effects.
[c]Results not shown, but adding the squared value of GDP per capita increases the R^2 to .18.
†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

higher), and a 14-point difference in Duty–Joy (the United States is 14 points higher). These differences may seem rather small, but one should keep in mind that these are the result after controlling for cohort- and country-fixed effects.

The cohort dummies are significant in all three models. These cohort dummies increase for Collectivism–Individualism and Duty–Joy, and they decrease (i.e., more negative) for Distrust–Trust. The generation born after 1980 scores—controlling for GDP per capita and country-fixed effects—25 points higher on Individualism and Joy and 17 points lower on Trust compared with the generation born between 1900 and 1920 (on a 0-100 scale). These are strong generational effects. In addition, for the Duty–Joy dimension, we observe that each cohort is consistently more joyous than previous generations. In addition to a shift toward more joyous values driven by increased welfare levels, this consistent increase of the cohort effect implies an autonomous effect of younger people being more joyous than their parents and grandparents. Interestingly, whereas higher scores on trust have been shown to have a positive effect on economic development (Beugelsdijk, De Groot, & van Schaik, 2004; Beugelsdijk & van Schaik, 2005), our cohort analysis shows that over time generations have moved in the direction toward distrust.

Precolonial Geography and Colonial History

Economic progress and generational effects do not explain cultural change completely though. Unique country-specific factors (measured by the country-fixed effects in Table 6) account for a substantial part of the variation in cultural orientations, depending on the dimension. Here, we calculate the country-fixed effect that results *after* taking economic development *and* autonomous cohort effects into account. The resulting fixed effect can be interpreted as the unique country-specific determinant of scores on the three dimensions of national culture. Below, we correlate these country-specific factors for the three dimensions with a series of exogenous variables related to precolonial opportunity endowments embodied in geography and subsequent colonial histories (a detailed overview of these variables and their sources can be found in Online Appendix Table A8). The selection of the variables is based on the set of ecological factors identified by Varnum and Grossmann (2017) as deep determinants of cultural change, complemented by variables taken from the literature on remote determinants of socioeconomic and human development (e.g., Murray & Schaller, 2010; Parker, 2010; Spolaore & Wacziarg, 2009).

The country-specific scores in Collectivism–Individualism correlate slightly positively ($r = .20$) but barely significantly ($p = .05$; $N = 96$) with those in Duty–Joy. By contrast, the country-specific scores in Distrust–Trust are uncorrelated with those in the other two dimensions. The online appendix (Table A11) shows the unique country-specific scores for each dimension (Figure A2 in the online appendix visualizes the country scores for two dimensions).

In the following, we demonstrate to what extent the country-specific factors in these three dimensions are explained by a host of temporally remote drivers of history currently discussed in the development literature. Sparked by Jared Diamond's (1997) epic *Guns, Germs and Steel*, this literature (for an overview, see Spolaore & Wacziarg, 2009) focuses on historically remote factors at the origin of long-lasting, highly inert country trajectories that stretch well into the present. This raises the question of whether these remote historic drivers can account for significant variance portions in country-specific factors and—if yes—for how much.

As country specificities in Collectivism–Individualism and Duty–Joy are positively correlated with each other, most historic drivers correlate in the same direction with country specificities in both cultural dimensions, albeit usually at a considerably higher magnitude in the Collectivism–Individualism dimension compared to the Duty–Joy dimension.

Here, we discuss the most stunning links with remote historical drivers. To begin with Collectivism–Individualism, country specificities in this dimension correlate at an exceptional strength ($r = .86$) with how early female fertilities started to decline in a country ($N = 69$). A

correlation of practically similar strength ($r = .85$), which covers 22 countries more ($N = 91$), exists with a purely geographic variable, labeled the Cool Water (CW) Index by Welzel (2013, 2014). This variable measures the combination of periodically, albeit not permanently, frosty winters with mostly mild summers under steady rain and other permanent fresh water sources. The Cool Water condition captures very well the unique thermo-hydrological configuration of Northwestern Europe and its oceanic offshoots in North America, Australia, and New Zealand. Welzel argues that the Cool Water condition is a root cause of the emancipatory dynamic that Western civilization has taken.

As shown in Table 7, no other historical drivers discussed in the literature show a similar associational strength with country specificities in Collectivism–Individualism as does Cool Water, regardless of whether these drivers are of an institutional nature (state antiquity, early corruption, early democracy), genetic (precolonial genetic distance to Northwest Europeans), or relate to precolonial agrarian history (the area's agrarian suitability, irrigation dependence, distance from closest early agrarian center, etc.). Using the four strongest correlates with sufficient country coverage to predict country specificities in Collectivism–Individualism, we explain 78% of the variation (see Table 7). Cool Water accounts for by far most of this explained variation, despite the fact that it is the most remote historic driver.

We explain considerably less variance in country specificities across the other two dimensions: Duty–Joy (51%) and Distrust–Trust (44%). This holds true no matter what combination of historic drivers we look at. Apparently, historically emerged differences in country trajectories are by a large magnitude more powerful in Collectivism–Individualism than in the other two dimensions. Collectivism–Individualism is, hence, the most significant cultural marker of historically divergent country trajectories.

Be that as it is, a couple of patterns in Duty–Joy and Distrust–Trust are worthwhile reporting. To begin with Duty–Joy, the most important marker of country specificities in this dimension is the fate of having been part of the Soviet Union and an occupied territory around 1900. These two victimization markers, which happen to coincide with a late adoption of agriculture, leave a negative mark on Joy and encourage a fixation on Duty.

Country specificities on Distrust–Trust seem to depict the genetic distance between Sub-Saharan Africans who are low on trust, and East Asians who are high on it. This interpretation is supported by the fact that differences in what Minkov and Bond (2015) call the "long-term life strategy gene complex" maps on the Distrust–Trust difference, with Sub-Saharan Africans and East Asians being the most polar groups. Still, this genetic difference accounts only for a modest proportion of the country specificities in Distrust–Trust. One reason is that Scandinavian Europeans are located in the middle of the African-Asian genetic distance but score on one polar end of the Distrust–Trust dimension: they are high on Trust.

In summary, there are pronounced residual variances in our three cultural dimensions that remain unexplicable by *contemporary* country characteristics. Accordingly, these residuals reflect more remote determinants of country trajectories, such as precolonial factor endowments and colonial legacies. Our finding on the importance of country-specific factors rooted in history and geography and climate resonates very well with cross-cultural studies highlighting the importance of such ecological factors to understand cross-country cultural scores (Georgas & Berry, 1995; Kashima & Kashima, 2003; van de Vliert, 2006, 2011). After accounting for differences in level of economic development and generational effects, we find that countries can be grouped together in clusters based on geography, climate, and history, a result in line with Georgas and Berry's (1995) ecocultural model and associated taxonomy of nations. For Collectivism–Individualism, our model suggests that these residuals are largely explained by the thermo-hydrological features typical of Northwestern Europe and its former oceanic offshoots in North America and Australia/New Zealand. For Duty–Joy and Distrust–Trust, by contrast, the

Table 7. Correlation and Regression Analyses of Country-Specific Effect Scores (Unbalanced).

Collectivism–Individualism		Duty–Joy		Distrust–Trust	
Historic drivers	Correlation (*r*) with country-specific score	Historic drivers	Correlation (*r*) with country-specific score	Historic drivers	Correlation (*r*) with country-specific score
Start of Fertility Decline	.86 (69)	Foreign Occupation 1900	−.57 (92)	Northern Out-of-Africa Route	−.45 (76)
Cool Water Index	.85 (91)	Ex-Soviet State	−.45 (92)	Migratory Distance from East Africa	−.35 (89)
School Attendance 1900	.83 (54)	Earliness of Agriculture	−.45 (91)	Long-Term Life Strategy Gene	.31 (51)
Western Family Pattern ca. 1850	.81 (88)	Migratory Distance from East Africa	.50 (92)	Foreign Occupation 1900	−.26 (91)
Women's Civil Liberties 1900	.71 (51)	Agrarian Suitability	−.39 (66)		
Liberal Democracy 1900	.70 (49)	School Attendance 1900	.40 (54)		
State Corruption 1900	−.66 (51)	Distance from First Agrarian Center	.32 (92)		
Agrarian Suitability	.46 (66)	State Antiquity Index	.26 (98)		
Distance from First Agrarian Center	.43 (92)	Western Family Pattern ca. 1850	.30 (88)		
Irrigation Dependence	−.42 (88)	Income per capita 1900	.32 (81)		
Genetic Distance from West	−.38 (74)	Irrigation Dependence	−.24 (88)		
State Antiquity Index	.37 (89)				
Multiple regression		**Multiple regression**		**Multiple regression**	
Input variable	Beta (*T*-ratio)	Input variable	Beta (*T*-ratio)	Input variable	Beta (*T*-ratio)
Cool Water Index	.51 (5.65)	Ex-Soviet State	−.30 (3.54)	Northern Out-of-Africa Route	−.18 (1.25)^{ns}
Western Family Pattern ca. 1850	.36 (3.98)	Foreign Occupation 1900	−.28 (2.99)	Long-Term Life Strategy Gene	.48 (4.12)
Diffusion Distance	.15 (2.85)	Migratory Distance from East Africa	.31 (4.02)	Migratory Distance from East Africa	−.50 (3.53)
		Earliness of Agriculture	−.22 (2.66)	Foreign Occupation 1900	−.34 (2.93)
Adjusted R^2 (*N*)	.78 (87)	Adjusted R^2 (*N*)	.51 (89)	Adjusted R^2 (*N*)	−.44 (46)

Note: Unless otherwise indicated (*ns*), all correlation and regression coefficients are significant at $p < .05$. Test statistics for multicollinearity (VIFs), heteroskedasticity (White-test), and influential cases (DFFITs) show no violations of OLS assumptions. For sources and meaning of historic driver variables, see online appendix. VIF = variance inflation factor; OLS = ordinary least squares.

residuals are of a more country-specific nature, reflecting singularities in each country's history that are not so easily generalizable across countries.

Conclusion

This article provided a synthesis of Hofstede's multidimensional culture framework and Inglehart's theory of cultural change. Using a variety of psychometric techniques commonly used in cross-cultural and comparative social science research, we are able to re-examine Hofstede's dimensions of national culture for 110 countries using WVS-EVS data. Our analysis

collapses Hofstede's six-dimensional framework to a three-dimensional framework. The (first) Collectivism–Individualism dimension mimics Hofstede's Individualism dimension. It also correlates with Power Distance, which is not surprising because just as in Hofstede's original case Individualism and Power Distance form one factor. The second dimension, Duty–Joy, captures Hofstede's Restraint-Indulgence. The third dimension, Distrust–Trust, is statistically closely related to Hofstede's Uncertainty Avoidance dimension. Our re-examination of three of Hofstede's dimensions should not be seen as an effort to legitimize his approach in general, nor are we suggesting that Hofstede is right and other cross-cultural frameworks are wrong. That is not the point of this article. The re-examination of Hofstede's dimensions serves to explore the nature of cultural change along these dimensions. Our study should not be interpreted as a theory-driven approach to develop a new cross-cultural framework.

To explore intergenerational value shift in our Hofstede-inspired multidimensional framework, we applied Inglehart's definition of generations using birth cohorts. We define five birth cohorts: 1900-1919, 1920-1939, 1940-1959, 1960-1979, and 1980-1999. An alternative definition of generations relies on shared historical and political experiences (Bengtson, 1975; Parry & Urwin, 2011; Strauss & Howe, 1991). Such an approach would work in a single or two-country study (e.g., Egri & Ralston, 2004), but it is practically impossible to define generations in each country based on each country's unique historical and political experiences when the sample includes more than 10 countries.

With the above limitation in mind, our main findings regarding cultural change can be summarized as follows:

1. Cultural change is substantial. Societies have become more individualistic and more joyous. We also observe a change in the direction of less trust and more distrust, but these changes are relatively small compared with the cultural change observed for Individualism and Joy.
2. Cultural differences can be explained by three factors: (a) economic development, (b) generational effects, and (c) a country's unique geographic location and (political) history. Economic development and generational shifts account for approximately half of the variation in cultural change. As the level of economic development increases, and people experience higher levels of existential security and lives filled with more opportunities, both Individualism and Joy increase. Our analysis suggests that approximately the other half of national cultural differences can be related to each country's unique geography and history.
3. Collectively, our findings imply that national cultural differences are quite persistent over time. Cultural change seems of absolute nature, and relative country rankings tend to be rather stable.

It needs to be emphasized that our analyses have been conducted at the group level, which is the level at which culture operates in shaping the norms and beliefs of individuals. Among the various characteristics that group people into collectivities of a shared identity, the nation is still among the most powerful ones. Thus, dimensions of cultural variation found across nations tend to be robust in their configuration, stable over time, and strongly linked to other characteristics that describe a society's aggregate reality. Usually, it is impossible to replicate dimensions of cultural variation found at the aggregate level *across* countries in the same shape at the individual level *within* countries. To date, this non-replicability at the individual level is often poorly understood and, therefore, a source of false concerns of whether one can trust such aggregate-level patterns as those revealed by our study. The point is that variance/co-variance patterns in psychological orientations are much stronger between than within countries and that the power of culture is responsible for that: culture tends to delimit psychological variation within entities and to

expand it between them. For this reason, the psychological power of culture is most visible in the aggregate, that is, in how it shapes entire societies' overall orientation.

Apart from this principled point, we see three more specific implications of our study. First, our finding on the stability of the countries' relative cultural position suggests that these measures will not be outdated any time soon and that findings using these measures will not be significantly affected by temporal variation, as long as the country scores are interpreted in a relative sense.

Second, cultural frameworks like ours have been used to develop a composite measure of cultural distance collapsing all cultural dimensions into a single Euclidean distance index (Beugelsdijk et al., 2017; Kogut & Singh, 1988). This approach relates cultural distance to a variety of firm-level outcomes (e.g., host country location choice of multinational firms) and is very popular in international management (Beugelsdijk et al., 2018). Our finding on the relative stability of country rankings implies that cultural distance scores, too, are relatively stable over the period considered in our article. This is an important conclusion in light of the criticism that such distance indices received (Kirkman et al., 2006; Shenkar, 2001).

Third, despite the relative stability, our analyses show that cultural change is also significant. Cultural shifts affect outcomes typically studied in cross-cultural psychology and international management because these shifts reduce the possibility to make *absolute* comparisons over time. For example, to understand why certain human resource practices are more or less effective in an organizational context, it is critical to take into account that societies' orientations toward the role of hierarchy and Individualism have changed, and that the younger generation has expectations and preferences that differ from older generations.

Our article, we hope, illustrates that analytical syntheses can create added value for both of two previously separated theories, especially if these theories are complementary in their strengths. Specifically, we have seen that Inglehart's dynamic theory, which has been criticized for a reductionist dimensionality, applies to the multidimensional framework of Hofstede who has been criticized for a stationary concept of culture. Having shown this brings us a good step closer to a more solid understanding of the dimensional dynamics of national cultures.

Acknowledgments

The authors thank Costas Katsikeas, Neil Morgan, Robbert Maseland, Loek Halman, the reviewers, and the editor for their useful suggestions and comments.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The first author thanks the Netherlands Organization for Scientific Research (NWO) for their financial support (VIDI-452-11-010)

Notes

1. The first (and only) time Ronald Inglehart and Geert Hofstede met face to face was at a conference organized by the European Values Studies (EVS) team at Tilburg University, the Netherlands, in 2002.
2. National scores of the Schwartz values are also available for countries outside of Europe. But all of these scores are based on convenient student–teacher samples. In other words, these data may not be representative. The same holds true for Hofstede's IBM data, for which reason a replication with cross-national representative data from around the world is a strong desideratum. The World Values Surveys

(WVS) is the ideal database for this purpose. In its fifth and sixth rounds, the WVS also included a condensed 10-item version of the Schwartz values. But Schwartz himself, who already expressed his concern about the European Social Survey 25-item condensation of his original 50-item concept, disapproved the WVS 10-item condensation. One reason for the disapproval is the discovery that the WVS-Schwartz values have considerably less explanatory power than Survival versus Emancipative Values as conventionally measured by the WVS.

3. We put in parentheses terminology that Hofstede himself did not use. We add these specifications due to the fact that all of these dimensions are bipolar. Consistency requires to label both poles on each dimension.
4. A common mistake is to equate Individualism with egocentric selfishness and the absence of affiliations and solidarity, while Collectivism is equated with the opposite: the absence of selfishness and the presence of affiliations and solidarity. This depiction is a most serious misinterpretation. The difference between Individualism and Collectivism is by no means one of affiliations per se but of the form of affiliations that prevail. Humans have evolved as a social species and all their achievements derive from coordinated teamwork. Hence, a society composed of non-cooperating, selfish egoists is against human nature and outright impossible. But individualistic and collectivistic cultures differ in the form of affiliations that people pursue. In individualistic cultures, people choose their affiliations voluntarily; in collectivistic cultures, they are imposed on them: people cannot escape obligations to their lineage—what Banfield (1958) once called "amoral familism." Likewise, the difference between Individualism and Collectivism is not one of solidarity as such but one of the type of solidarity that prevails. In collectivistic cultures, a *particularistic* form of solidarity with one's extended family prevails. In individualistic cultures, universal institutions of the welfare state (like universal health care) create a *generalized* form of solidarity that frees people from family obligations. This is the reason why generalized interpersonal trust, impartial governance, rule of law. and formal institutions only work in individualistic cultures. For a more detailed discussion of these points, see Welzel (2013, chapter 6).
5. We doubt this conceptual distinction. If one believes in Individualism in the sense that what people achieve should be a result of their merit, the idea that the authority of a few over the many is natural does not make sense. Hence, Individualism embodies a strong anti-authoritarian impulse that aligns naturally with Power Distance. This logical link underlies the close empirical connection.
6. The Masculinity dimension extracted by Hofstede continues to form a separate factor even after adding Schwartz's value dimensions and/or Globe's value dimensions. Although the item to observation ratio becomes rather low in such a factor analysis, this does suggest that the Masculinity dimension is unique to Hofstede's framework.
7. One should note, however, that similar absolute distances mean lower relative distances at higher levels: the same absolute age distance—say 5 years—means a smaller relative distance at higher ages, not only mentally but purely mathematically: a 10 years old sister is 2 times older than her 5 years old brother, but when these siblings have reached the ages of 55 and 50, the same absolute age distance shrank from a ratio of 2.0 to 0.1.
8. We would note that Hofstede himself has been quoted for saying that "If I would do it again, I would use the WVS," clearly suggesting his generally favorable approach toward the WVS. This refers to the title of a plenary session by Hofstede held at the Academy of International Business Annual Meeting, July 6, 2013 in Istanbul, Turkey.
9. All codebooks and data are available from the website of the WVS, http://www.worldvaluessurvey.org, or EVS, http://europeanvaluesstudy.eu
10. There is only one WVS-EVS question that correlates (.93) with the Masculinity dimension. This question concerns the degree to which the respondent agrees that a wife must always obey her husband. It is not included in the sample because it has only been asked in 12 countries, thus not passing the multi-country coverage criterion.
11. The relatively small subject-to-item ratio is no cause of concern (Leung & Bond, 1989; MacCallum, Widaman, Zhang, & Hong, 1999). Loadings of this size have been shown to be interpretable whatever the sample size used (Guadagnoli & Velicer, 1988).
12. A careful look at the country scores shows that Vietnam, Uzbekistan, and China score relatively high on trust (low on distrust). As suggested by one of the reviewers, this raises the question on response

bias for the question on political confidence in countries with limited political freedom. A response bias and outlier analysis can be found in the online appendix. We have no reason to exclude these countries from our sample, but we agree with the reviewer that these countries score very high on a subset of the items included in our analysis. We thank the reviewer for pointing this out.

13. With the exception of China, for which we compare the 2000 wave with the 2012 wave.
14. Because of the break-up of countries, the data series are not complete. This is especially relevant to the former Soviet Union and some Eastern European countries. As many of these became independent around 1990, the missing data problem is relatively small. For the Czech Republic and Slovakia, we therefore used the gross domestic product (GDP) per capita scores on former Czechoslovakia. For Slovenia, Macedonia, Montenegro, Bosnia, and Serbia, we have estimated the GDP per capita score for the second cohort. We do so by taking the GDP per capita ratio of each country relative to the GDP per capita of Yugoslavia in the third cohort, and use that ratio to calculate the score for the second cohort using the score on Yugoslavia for the second cohort. We applied the same imputation technique for some countries part of the former Soviet Union. For Estonia, Lithuania, Latvia, Armenia, Azerbaijan, Kyrgyzstan, Ukraine, and Moldova, we estimate the GDP per capita in the second and third cohort using the 1973 GDP per capita ratio of these countries and the USSR.
15. We cannot perform a Granger causality test or use de-trending techniques because we have large N and small T in our panel data. The number of time periods is too short to perform such tests. After establishing that first order autocorrelation (AR1) is present, we control for AR1 by estimating a panel-fixed effects model where we correct our standard errors for any kind of serial autocorrelation and/or heteroscedasticity. The STATA command we use is "xtreg depvar indpvars, fe, cluster(country)." The alternative is to apply a Driscoll–Kraay estimator (the xtscc command in STATA), but this results in smaller standard errors and larger t values. We prefer to estimate our model yielding more conservative results. For a discussion of these econometric issues, we refer to Hoechle (2007) and Tiokhin and Hruschka (2017).
16. Because of missing historical GDP per capita data for Nigeria, Luxemburg, and Iceland, the number of observations in the regression analysis with the four cohorts is 65, and not 68 as used in Figures 7 to 9.
17. In addition to GDP per capita, we have explored a broader indicator of welfare. Vanhanen (2003) has created an Index of Power Resources (IPR), which combines indicators of occupational specialization, formal education, and economic de-concentration. IPR scores are missing for 4 of the five cohorts in Azerbaijan, Armenia, Belarus, Taiwan, Croatia, Bosnia, Estonia, Georgia, Indonesia, Latvia, Lithuania, Moldova, Singapore, Vietnam, and Slovenia reducing sample size considerably. Substituting GDP per capita by the IPR index gives similar results. Because of the smaller sample size when using IPR scores and the high correlation with GDP per capita ($r = .86$), we prefer to use the GDP per capita data in this analysis.

ORCID iD

Chris Welzel https://orcid.org/0000-0002-1562-3580

Supplemental Material

Supplemental material for thhis article is online available.

References

Ailon, G. (2008). Mirror, mirror on the wall: Culture's consequences in a value test of its own design. *Academy of Management Review*, *33*, 885-904.

Aléman, J., & Woods, D. (2016). Value orientations from the World Values Survey: How comparable are they cross-nationally? *Comparative Political Studies*, *49*, 1039-1067.

Banfield, E. 1958. The moral basis of a backward society. *Glencoe, illinois*. The Free Press.

Baskerville, R. F. (2003). Hofstede never studied culture. *Accounting, Organizations and Society*, *28*, 1-14.

Baskerville-Morley, R. F. (2005). A research note: The unfinished business of culture. *Accounting Organizations and Society*, *30*, 389-391.

Bell, D. (1973). *The coming of post-industrial society*. New York, NY: Basic Books.
Bengtson, V. L. (1975). Generation and family effects in value socialization. *American Sociological Review*, *40*, 358-371.
Beugelsdijk, S. (2006). A note on the theory and measurement of trust in explaining differences in economic growth. *Cambridge Journal of Economics*, *30*, 371-387.
Beugelsdijk, S., De Groot, H. L. F., & van Schaik, T. (2004). Trust and economic growth: A robustness analysis. *Oxford Economic Papers*, *56*, 118-134.
Beugelsdijk, S., Kostova, T., Kunst, V. E., Spadafora, E., & van Essen, M. (2018). Cultural distance and firm internationalization: A meta-analytic review and theoretical implications. *Journal of Management*, *44*, 89-130.
Beugelsdijk, S., Kostova, T., & Roth, K. (2017). An overview of Hofstede inspired country level culture studies in international business. *Journal of International Business Studies*, *48*, 30-47.
Beugelsdijk, S., & Maseland, R. (2011). *Culture in economics, history methodological reflections and contemporary applications*. Cambridge, UK: Cambridge University Press.
Beugelsdijk, S., Maseland, R., & van Hoorn, A. (2015). Are scores on Hofstede's dimensions stable over time? *Global Strategy Journal*, *5*, 223-240.
Beugelsdijk, S., & van Schaik, T. (2005). Social capital and growth in European regions: An empirical test. *European Journal of Political Economy*, *21*, 301-324.
Bolt, J., & van Zanden, J. L. (2014). The Maddison Project: Collaborative research on historical national accounts. *The Economic History Review*, *67*, 627-651.
Brewer, P., & Venaik, S. (2011). Individualism–collectivism in Hofstede and GLOBE. *Journal of International Business Studies*, *32*, 436-445.
Chinese Culture Connection. (1987). Chinese values and the search for culture-free dimensions of culture. *Journal of Cross-Cultural Psychology*, *18*, 143-164.
Delhey, J., & Newton, K. (2005). Predicting cross-national levels of social trust: Global pattern or Nordic exceptionalism? *European Sociological Review*, *21*, 311-327.
Diamond, J. (1997). *Guns, germs and steel*. New York, NY: Simon & Schuster.
Earley, P. C., & Gibson, C. B. (1998). Taking stock in our progress on individualism-collectivism: 100 years of solidarity and community. *Journal of Management*, *24*, 265-304.
Egri, C., & Ralston, D. (2004). Generation cohorts and personal values: A comparison of China and the United States. *Organization Science*, *15*, 210-220.
Fang, T. (2003). A critique of Hofstede's fifth national culture dimension. *International Journal of Cross-Cultural Management*, *3*, 347-368.
Flanagan, S. (1987). Value change in industrial society. *American Political Science Review*, *81*, 1303-1319.
Flanagan, S., & Lee, A. R. (2003). The new politics, culture wars, and the authoritarian-libertarian value change in advanced industrial democracies. *Comparative Political Studies*, *26*, 235-270.
Florida, R. 2002. *The Rise of the Creative Class and how it is transforming work, leisure, community and everyday life*. New York, NY. Basic Books.
Flynn, R. (2012). *Are we getting smarter? Rising IQ in the twenty-first century*. New York, NY: Cambridge University Press.
Fornell, C., & Larcker, D. F. (1981). Assessing construct validity in organizational research. *Administrative Science Quarterly*, *36*, 421-458.
Fukuyama, F. (1995). *Trust: The social virtues and the creation of prosperity*. London, England: Hamish Hamilton.
Gelfand, M., Bhawuk, D., Nishii, L., & Bechtold, D. (2004). Individualism and collectivism. In R. J. House, P. J. Hanges, M. Javidan, P. W. Dorfman, & V. Gupta (Eds.), *Culture, leadership and organizations: The GLOBE study of 62 societies* (pp. 438-512). Thousand Oaks, CA: SAGE.
Gelfand, M., Erez, M., & Aycan, Z. (2007). Cross-cultural organizational behavior. *Annual Review of Psychology*, *58*, 479-514.
Georgas, J., and Berry, J.W. 1995. An ecocultural taxonomy for cross-cultural psychology. *Cross-Cultural research*. *29*(2): 121-157.
Gorodnichenko, Y., & Roland, G. (2011). Which dimensions matter for long-run growth? *American Economic Review*, *101*, 492-498.
Greene, W. H. (2008). *Econometric analysis* (6th ed.). Upper Saddle River, NJ: Prentice Hall.

Grossmann, I., & Varnum, M. E. W. (2015). Social structure, infectious diseases, disasters, secularism, and cultural change in America. *Psychological Science*, *26*, 311-324.

Guadagnoli, E., & Velicer, W. F. (1988). Relation of sample size to the stability of the component patterns. *Psychological Bulletin*, *103*, 265-275.

Hamamura, T. (2012). Are cultures becoming individualistic? A cross-temporal comparison of individualism-collectivism in the United States and Japan. *Personality and Social Psychology Review*, *16*, 3-24.

Hoechle, D. (2007). Robust standard errors for panel regressions with cross-sectional dependence. *The Stata Journal*, *7*, 281-312.

Hofstede, G. (1980). *Culture's consequences: International differences in work related values*. Beverly Hills, CA: SAGE.

Hofstede, G. (1991). *Cultures and organizations: Software of the mind*. New York, NY: McGraw-Hill.

Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations*. Thousand Oaks, CA: SAGE.

Hofstede, G., & Bond, M. H. (1988). The confucius connection: From cultural roots to economic growth. *Organizational Dynamics*, *16*(4), 4-21.

Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). *Cultures and organizations: Software of the mind* (3rd. ed.). New York, NY: McGraw-Hill.

House, R. J., Hanges, P. J., Javidan, M., Dorfman, P. W., & Gupta, V. (2004). *Culture, leadership and organizations: The GLOBE study of 62 societies*. London, England: SAGE.

Huntington, S. P. (1996). *The clash of civilizations and the remaking of the world order*. New York, NY: Simon & Schuster.

Inglehart, R. (1971). The silent revolution in Europe: Intergenerational change in post-industrial societies. *American Political Science Review*, *65*, 991-1017.

Inglehart, R. (1990). *Culture shift in advanced industrial society*. Princeton, NJ: Princeton University Press.

Inglehart, R. (1997). *Modernization and postmodernization: Cultural, economic, and political change in 43 societies*. Princeton, NJ: Princeton University Press.

Inglehart, R., & Baker, W. (2000). Modernization, cultural change, and the persistence of traditional values. *American Sociological Review*, *65*, 19-51.

Inglehart, R., & Norris, P. (2003). *Sacred and secular*. New York, NY: Cambridge University Press.

Inglehart, R., & Welzel, C. (2005). *Modernization, cultural change and democracy: The human development sequence*. New York, NY: Cambridge University Press.

Inkeles, A. (1960). Industrial Man: The relations of status to experience, perception, and value. *American Journal of Sociology 66*(1): 1-31.

Inkeles, A. and Smith, D.H. (1974). *Becoming modern: Individual change in six developing countries*. Cambridge, Harvard University Press.

Javidan, M., House, R. J., Dorfman, P. W., Hanges, P. J., & de Luque, M. S. (2006). Conceptualizing and measuring cultures and their consequences: A comparative review of GLOBE's and Hofstede's approaches. *Journal of International Business Studies*, *37*, 897-914.

Kashima, Y., & Kashima, E. S. (2003). Individualism, GNP, climate, and pronoun drop: Is individualism determined by affluence and climate, or does language use play a role? *Journal of Cross-Cultural Psychology*, *34*, 125-134.

Kirkman, B. L., Lowe, K. B., & Gibson, C. B. (2006). A quarter century of "culture's consequences": A review of empirical research incorporating Hofstede's cultural values framework. *Journal of International Business Studies*, *37*, 285-320.

Klasing, M. (2013). Cultural dimensions, collective values and their importance for institutions. *Journal of Comparative Economics*, *41*, 447-467.

Kluckhohn, F., & Strodtbeck, F. (1961). *Variations in value orientations*. Evanston, IL: Row, Peterson.

Kogut, B. and Singh, H. 1988. The efect of national culture on the choice of entry mode. *Journal of International Business Studies 19*(3): 411-432.

Leung, K., & Bond, M. H. (1989). On the empirical identification of dimensions for cross-cultural comparisons. *Journal of Cross-Cultural Psychology*, *20*, 133-151.

Li, L. M. W., & Bond, M. H. (2010). Value change: Analyzing national change in citizen secularism across four time periods in the World Values Survey. *The Social Science Journal*, *47*, 294-206.

MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological Methods*, *4*, 84-99.

Maslow, A.H. 1954. *Motivation and Personality*. New York: Harper & Row.
The Maddison Project. (2013). Retrieved from http://www.ggdc.net/maddison/maddison-project/home.htm
McClelland, D. (1961). *The achieving society*. Princeton, NJ: Van Nostrand.
McSweeney, B. (2002). Hofstede's model of national cultural differences and their consequences: A triumph of faith–a failure of analysis. *Human Relations*, *55*, 89-118.
McSweeney, B. (2009). Dynamic diversity: Variety and variation within countries. *Organization Studies*, *30*, 933-957.
Minkov, M. (2011). *Cultural differences in a globalizing world*. Bingley, UK: Emerald.
Minkov, M. (2018). A revision of Hofstede's model of national culture: Old evidence and new data from 56 countries. *Cross Cultural & Strategic Management*, *25*, 231-256.
Minkov, M., & Bond, M. H. (2015). Genetic polymorphisms predict national differences in life history strategy and time orientation. *Personality and Individual Differences*, *76*, 204-215.
Minkov, M., & Hofstede, G. (2012). Hofstede's fifth dimension: New evidence from the World Values Survey. *Journal of Cross-Cultural Psychology*, *43*, 27-43.
Minkov, M., & Hofstede, G. (2014). A replication of Hofstede's uncertainty avoidance dimension across nationally representative samples from Europe. *International Journal of Cross-Cultural Management*, *14*, 161-171.
Murray, D. R., & Schaller, M. (2010). Historical prevalence of infectious diseases in 230 geopolitical regions. *Journal of Cross-Cultural Psychology*, *41*, 99-108.
Nakata, C. (2009). *Beyond Hofstede: Cultural frameworks for global marketing and management*. Basingstoke, UK: Palgrave MacMillan.
Nannestad, P. (2008). What have we learned about generalized trust, if anything? *Annual Review of Political Science*, *11*, 413-436.
Nash, M. (1964). Social prerequisites to economic growth in Latin America and Southeast Asia. *Economic Development and Cultural Change*, *12*, 225-242.
Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory*. New York, NY: McGraw-Hill.
Oyserman, D., Coon, H., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analysis. *Psychological Bulletin*, *128*(1), 3-72.
Parker, P. M. (2010). *Physioeconomics: The basis for long-run economic growth*. Boston, MA: MIT Press.
Parry, E., & Urwin, P. (2011). Generational differences in work values: A review of theory and evidence. *International Journal of Management Reviews*, *13*, 79-96.
Pinker, S. (2011). *The better angels of our nature*. London, England: Allen Lane.
Preyer, G., & Sussman, M. (2016). *Varieties of multiple modernities*. Boston, MA: Brill.
Putnam, R. (1993). *Making democracy work: Civic traditions in modern Italy*. Princeton, NJ: Princeton University Press.
Putnam, R. (2000). *Bowling alone: The collapse and revival of American community*. New York, NY: Simon & Schuster.
Ralston, D. A. (2008). The crossvergence perspective: Reflections and projections. *Journal of International Business Studies*, *39*, 27-40.
Ronen, S., & Shenkar, O. (2013). Mapping world cultures: Cluster formation, sources and implications. *Journal of International Business Studies*, *44*, 867-897.
Schwartz, S. H. (1994). Cultural dimensions of values: Toward an understanding of national differences. In U. Kim, H. C. Triandis, C. Kagitcibasi, S.-C. Choi, & G. Yoon (Eds.), *Individualism and collectivism: Theory, method and applications* (pp. 85-119). Newbury Park, CA: SAGE.
Schwartz, S. H. (2004). Mapping and interpreting cultural differences around the world. In H. Vinken, J. Soeters, & P. Ester (Eds.), *Comparing cultures: Dimensions of culture in a comparative perspective* (pp. 43-73). Leiden, The Netherlands: Brill.
Shenkar, O. (2001). Cultural distance revisited: Towards a more rigorous conceptualization and measurement of cultural differences. *Journal of International Business Studies*, *32*, 519-535.
Singelis, T. M., Triandis, H. C., Bhawuk, D. P. S., & Gelfand, M. (1995). Horizontal and vertical dimensions of individualism-collectivism: A theoretical and measurement refinement. *Cross Cultural Research*, *29*, 240-275.
Smith, P. B., Dugan, S., & Trompenaars, F. (1996). National culture and the values of organizational employees: A dimensional analysis across 43 nations. *Journal of Cross-Cultural Psychology*, *27*, 231-264.

Smola, K. W., & Sutton, C. D. (2002). Generational difference: Revisiting generational work values for the new millennium. *Journal of Organizational Behavior*, *23*, 363-382.

Søndergaard, M. (1994). Research note: Hofstede's consequences, a study of reviews, citations and consequences. *Organization Studies*, *15*, 447-456.

Spolaore, E., & Wacziarg, R. (2009). The diffusion of development. *The Quarterly Journal of Economics*, *2*, 469-529.

Strauss, W., & Howe, N. (1991). *Generations: The history of America's future, 1584–2089*. New York, NY: Quill William Morrow.

Taras, V., Kirkman, B., & Steel, P. (2010). Examining the impact of culture's consequences: A three-decade, multi-level, meta-analytic review of Hofstede's cultural value dimensions. *Journal of Applied Psychology*, *95*, 405-439.

Taras, V., Steel, P., & Kirkman, B. (2012). Improving national cultural indices using a longitudinal meta-analysis of Hofstede's dimensions. *Journal of World Business*, *47*, 329-341.

Taylor, P. (2014). *The next America: Boomers, millennials, and the looming generational showdown*. PublicAffairs.

Tiokhin, L., & Hruschka, D. (2017). No evidence that an Ebola outbreak influenced voting preferences in the 2014 elections after controlling for time-series autocorrelation: A commentary on Beall, Hofer, and Schaller (2016). *Psychological Science*, *28*, 1358-1360.

Triandis, H. C., & Gelfand, M. J. (2012). A theory of individualism and collectivism. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (pp. 498-520). Thousand Oaks, CA: Sage.

Triandis, H. C. (1995). *Individualism and collectivism*. Boulder, CO. United States: Westview Press.

Triandis, H.C. 2001. Individualism-Collectivism and personality. *Journal of Personality*. *69*(6): 907-924.

Triandis, H. C., Bontempo, R., Villareal, M. J., Asai, M., & Lucca, N. (1988). Individualism and collectivism: Cross-cultural perspectives on self-ingroup relationships. *Journal of Personality and Social Psychology*, *54*, 323-338.

Triandis, H. C., & Gelfand, M. (1998). Converging measurement of horizontal and vertical individualism. *Journal of Personality and Social Psychology*, *74*, 118-128.

Tsui, A., Nifadkar, S. S., & Ou, A. Y. (2007). Cross-national, cross-cultural organizational behavior research: Advances, gaps and recommendations. *Journal of Management*, *33*, 426-478.

Tung, R. (2008). The cross cultural research imperative: The need to balance cross national and intra-national diversity. *Journal of International Business Studies*, *39*, 41-46.

Tung, R., & Verbeke, A. (2010). Beyond Hofstede and GLOBE: Improving the quality of cross-cultural research. *Journal of International Business Studies*, *41*, 1259-1274.

Uz, I. (2015). The index of cultural tightness and looseness among 68 countries. *Journal of Cross-Cultural Psychology*, *46*, 319-335.

Van de Vliert, E. (2006). Autocratic leadership around the globe: Do climate and wealth drive leadership culture? *Journal of Cross-Cultural Psychology*, *35*, 62-73.

Van de Vliert, E. (2011). Climato-economic origins of variation in ingroup favoritism. *Journal of Cross-cultural Psychology*, *42*, 494-515.

Vanhanen, T. (2003). *Democratization*. London, England: Routledge.

Varnum, M. E. W., & Grossmann, I. (2017). Cultural change: The how and why. *Perspectives on Psychological Science*, *12*, 956-972.

Venaik, S., & Brewer, P. (2010). Avoiding uncertainty in Hofstede and GLOBE. *Journal of International Business Studies*, *41*, 1294-1315.

Welzel, C. (2007). Are levels of democracy influenced by mass attitudes? *International Political Science Review*, *28*, 397-424.

Welzel, C. (2013). *Freedom rising: Human empowerment and the quest for emancipation*. New York, NY: Cambridge University Press.

Welzel, C. (2014). Evolution, empowerment and emancipation: How societies climb the freedom ladder. *World Development*, *64*, 33-51.

Zak, P., & Knack, S. (2001). Trust and growth. *Economic Journal*, *111*, 295-321.

Zhou, C., Yiu, W. Y. V., Wu, M. S., & Greenfield, P. M. (2018). Perception of cross-generational differences in child behavior and parent socialization: A mixed-method interview study with Chinese grandmothers. *Journal of Cross-Cultural Psychology*, *49*, 62-81.